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Table of Contents

An Address.[1]

INTERPERSONAL RELATIONS IN THE MEDICAL PROFESSION.

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THROUGHOUT their lives humans are troubled, in various ways, by problems in their relationships with one another, and it is not infrequent for these problems to obtrude themselves into a medical consultation as major or contributory causes of distress.

Doctors tend to become, in some measure, experts in human relationships, both as they affect people generally and in the special doctor-patient situation, the management of which may require considerable skill. Being between experts, relationships between medical men (or women) should be exceptionally good; and this undoubtedly is the case. Nevertheless, problems do arise, and the subject is of such importance that consideration of certain basic factors and difficulties in interprofessional relationships is called for.

The subject naturally falls into three main groups: first the individual, who starts a medical career and has his own pecularities and ease, or otherwise, in forming bonds of human sympathy and understanding; secondly, the modifying influence of the medical student period; thirdly, factors which operate during the professional life of the medical man.

The individual enters the medical school with his own particular personality which has, we believe, been determined by early environmental influences, especially by the type of human relationship established in his home during his formative years, but modified by subsequent social experience at school and elsewhere. He has more or less ease in getting on with others, more or less confidence in himself, and he may display, to a greater or lesser degree, aggressive or dependent characteristics in his dealings with others. Fortunately, it is only very rarely that a major disorder of personality is present and becomes manifest during the professional period; however, when this does occur, it is of great importance to doctors generally and poses considerable problems to the organized profession.

The individual factors which influence interprofessional relationships are clearly of paramount importance, and whatever may be the modifying influence of training and

[1] Retiring President's address delivered at the annual general meeting of the Western Australian Branch of the British Medical Association on March 12, 1960.

experience, they remain so throughout professional life. The doctor-doctor relationship is always primarily a relation between two individuals, and ideally, each should, in every transaction, make tolerant allowance for his colleague's and his own peculiarities and prejudices.

We want to know what sort of people start a medical career, and whether they have any particular characteristics, but it is difficult to obtain precise information on this matter. A study of the literature was not very helpful, and virtually the only thing that was learned was that at some time in America's stormy medical history it was said that "the medical student was likely to be the one son in the family thought too weak to labour on the farm, too indolent to do any bodily exercise, too stupid for the bar, and too immoral for the pulpit".

An attempt has been made to obtain information about our present group of medical students, and members of the University staff have been very helpful. The Guidance Officer, R. Flecker, told me that a survey of the intelligence levels of a group of undergraduates showed an even spread in the various faculties, the medical students being neither higher nor lower than the others. A. W. Anderson, of the Faculty of Education, informed me of the results of a survey of personality traits by the Sixteen Personality Factor Questionnaire on the 1958 first-year students. In this test, groups of characteristics are contrasted; for example, good natured, cooperative and attentive are set against aggressive, obstructive and cool; happy-go-lucky against brooding; imaginative and frivolous against unimaginative and self-sufficient; and so on. There are definite significant differences between the various faculties in some of the traits listed in this *questionnaire*. At one side is the arts faculty scoring high in the more sociable and imaginative characteristics, while at the other is engineering, where the cold and practical are the stronger trends. The science group falls between, and medicine is close to science, but has a slight but definite tendency towards arts.

The personality traits were correlated with academic performance, and it was found that those which brought the medical group closer to the arts students correlated negatively. The "humanities" type traits tended to be eliminated during the first year. Whether this is a good thing or not one cannot tell; but it is noteworthy that the subjects taught in this year are purely scientific, and that medical men have little or no influence.

The influence of the medical school period on the development of good interprofessional relations is very important, and is particularly so because it is more readily subject to modification than any other. During this period individuals are working as a group, learning more or less the same things and sharing similar experiences and difficulties. They have the opportunity to acquire considerable understanding of one another, both when serious, and during the surprising happenings of their lighter moments.

Some degree of rivalry is a part of the student's life and, no doubt, has a good influence. However, in excess, it can be dangerous, especially when too much depends on the place the student obtains in his class. Sinclair (1955), in his study of medical students, draws attention to this danger, and states that some American students, whose careers may depend on their places in the class, will double-cross their fellows without hesitation if they think that they may improve their own standing by so doing. Among a number of examples given was that of the student who misdirected two of his colleagues when they asked him where a particular lecture was to be given, in the hope they would miss information which he himself would obtain by attending, and that in this way, his own performance in the examination might be improved relative to theirs.

It is important that clinical teachers should constantly be aware of the need to foster good interprofessional relations and that they may have a considerable influence. Precept is better than high-sounding ideals. At one time it was not uncommon to hear clinical teachers referring scornfully to the professional abilities of patients' private doctors, or of their own colleagues in the hospital. Fortunately this custom has largely disappeared. Nevertheless, it is clearly desirable that all members of a teaching hospital staff should be vigilant in maintaining good relations with local practitioners, and that disagreements amongst themselves should be kept on a plane of mutual tolerance.

It sometimes happens that the customs of the medical school are carried into professional life to an excessive degree. Some seem to find difficulty in discarding modes of behaviour with patients and doctors which they have learnt as students, and which are appropriate in a teaching hospital but inappropriate in practice. At times, the relation between student and teacher is carried into practice as the relation between general practitioner and consultant, to the detriment of this relationship. The persistence of the class rivalry, the scoring of points for clever diagnoses and the like can serve as a useful intellectual stimulus, but if excessive, they can encourage a superficial attitude and may interfere with the development of cooperation among doctors in approaching medical problems.

Consideration of the practising medical profession immediately reveals a paradox. On the one hand, medical men show a remarkable unity, a great similarity in ideals and a willingness to help one another both professionally and personally. On the other hand, that doctors disagree is a by-word, and we all know that at times doctors may refer to their colleagues in immoderate and unrestrained terms. To quote from a contemporary publication:

> He may have to be polite to some surgical mountebank, while he itches to put his foot where it belongs.

Or:

> We can feel nothing but contempt for the medical crook, for he trades upon a confidence he has done nothing to build up.

It appears that some practitioners are rather isolated intellectually from their fellows, and at times medical men seem insecure in their relations with one another. These phenomena are perhaps the result of training and experience, for although as students medical men are learning much the same things, after they have qualified experience is so diverse that each acquires a body of knowledge and a series of attitudes which are quite unique. It is soon apparent to an individual that on few medical matters does he think in quite the same way as his colleagues, and on some his approach is entirely different. He has developed a "professional brain" on which his livelihood and professional success depend, and it is so individual that unless he has remained in a group in which ideas are freely exchanged, it is easy for him to feel isolated and insecure.

Each individual doctor is, to a large extent, solitary in his reaction to the multitude of problems he faces. He may have difficulty in understanding the attitudes of his fellows. He is inclined to react excessively to disagreement.

An essential feature of medicine is that its practitioners must be constantly modifying, and not infrequently drastically altering, their beliefs and attitudes. None can afford the luxury of fixed views. It is possible that a reaction against the alteration of settled ideas is part of the essential mechanism of brain function. Certainly the acceptance of a new or foreign idea can be a distinctly uncomfortable process, and much heat may be engendered.

It is worth noting (as a possible factor in some of our disagreements on professional matters) that our opinions are formed from the information which has been put into the brain, and that absence of information is not noticed. It is frequently easier to form definite opinions when there is little information to correlate than when there is much. Most of us feel capable of forming an opinion on another man's subject. Even our patients and their relatives and friends often find it easier to decide on a form of therapy than we do ourselves.

The importance of continued communication between doctors at meetings, discussions and the like is self-evident

and generally agreed; however, although a great deal is being done, the means by which it can be arranged that the bulk of the profession take part in such gatherings is not clear.

Difficulties in communication between doctors are numerous. The rapid growth of specialized knowledge, techniques and terminology tends to make gulfs between different groups, each of which may find it almost impossible to understand the problems, ideas and sometimes even the language of the other.

The speed of progress and change in medicine and science makes it inevitable that each new generation of doctors has a substantially different basis of knowledge and ideas. Even over a few years there are great changes, and new words symbolizing complicated conceptions make their appearance and are freely used. Groups who have trained at different periods may find great difficulty in understanding each other.

To the organized profession, the tendency of doctors to form themselves into groups is perhaps more important than any other factor in interprofessional relationships. The number of groupings in the profession has become very large, not only the specialties, but also the country of origin and even the mode of remuneration—for example, employed or self-employed—may serve to separate us. Some differences in our ways of thought are inevitable, but are very small when compared with the differences which separate doctor and layman.

It is all too easy, but very dangerous, to think of a group as having particular characteristics of behaviour and thought. We all know that specialists always behave in one way and that general practitioners always behave in another. However, quite superficial observation suffices to demonstrate that medical men are far too individualistic to follow any party line.

The forthcoming reorganization of the Association in Australia will give us an opportunity to consider the constitution in the light of the modern situation in medicine. The means by which all branches of the profession can be brought to feel that they have an adequate voice in the decisions of the Association are already being pondered. In due course members will be asked to give their opinions. Much thought by all of us is called for.

There remains the problem of the rogue, fancied or real. Accurate information about him is hard to come by. We have no generally accepted definition, and the incidence and ætiological factors are obscure. Rogues are found in other mammals besides *Homo sapiens*, and although there are dangers in transferring observations on one species to another, the case of the walrus is worthy of note

In this species, as described by S. Carrighar, rogues develop in well-defined circumstances. Students of Lewis Carroll will know that the walrus is inordinately fond of shell-fish, which indeed forms his staple diet. However, a considerable period of training and maturing is necessary before the animal can acquire the ability to obtain this food. If deprived of his mother at an early age, he never learns this art, but, instead, maintains himself by consuming warm-blooded creatures. As a result of this unorthodox practice, he tends to wax larger and fatter than other walruses, and also he develops a distinctive odour. Because of his peculiar smell he is not able to join the communities of his own kind, and although, throughout his life, he frequently tries to approach them, he is always rebuffed. He is to be found, lying on an ice floe, watching from a distance the crowds of his fellows, always a spectator, but never able to join them.

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CALCIUM CARBIMIDE—A NEW PROTECTIVE DRUG IN ALCOHOLISM.

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DESPITE the fact that disulfiram has not proved as valuable an adjunct in the treatment of alcoholism as was at first hoped, it is still widely used. Alcoholics who desire treatment have need of medication which will create an unpleasant, but not harmful, reaction if alcohol is taken, which will not produce addiction or habituation, and can be safely given over a prolonged period. Ideally, such a drug will also have no undesirable side effects in its own right (Smith *et alii*, 1957).

Most of these criteria are met by disulfiram. However, four deaths have been reported by Jacobsen (1952) in a review of the literature and of 11,000 Danish patients. These deaths were presumably the result of a disulfiram-alcohol reaction. Nevertheless, a greater handicap has been the occurrence of many side effects, the most common being drowsiness, which occurs in nearly all cases in some series. Other complaints are of a metallic taste and odour (believed due to the sulphur radicle), allergic skin rashes, impotence, gastric irritation and sensations of dizziness. Confusional psychoses have been reported (Christie, 1956).

However, it would be naïve to assume that the failure of disulfiram to live up to its earlier expectations was due to these factors alone. This and related drugs, such as citrated calcium carbimide, have value, not because of their specific pharmacological function, but because of the patient's awareness of the nature of a potential pharmacological action with alcohol (Armstrong, 1957). There is no reason why the alcoholic should not simply discontinue the drug and remove its protection whenever he wishes. As alcoholics are frequently patients who rebel against authority and have difficulty sustaining awareness of their disturbed relationship to society, they often do so. However, there are a few who continue on these drugs possibly because of certain dependent characteristics in their personality, or because of a strong positive relationship with a doctor. This is a most interesting point. Hoff and associates (1955) found in a large controlled series that patients on disulfiram generally did better than those who did not receive it. However, this difference tended to disappear when those who dropped out early were removed from the study. This suggests that the taking of disulfiram, and probably for that matter any related drug, may merely indicate that the patients were motivated to use available methods of control, rather than that the drug made a specific contribution to the patients' recovery.

As to the deterrent effects of an unpleasant reaction, it has been pointed out by Smith et alii (1957) that the unpleasantness of such reactions may be of little therapeutic value, as there is a marked masochistic element in alcoholism. Alcoholics frequently undergo very unpleasant experiences after "benders" without influence on their drinking habits.

All these points have to be carefully considered when a new "protective" drug is being investigated.

In 1953, an investigation was begun by Ferguson in the University of Toronto Department of Pharmacology to find a drug which, like disulfiram, would render the effects of alcohol unpleasant to the drinker, but might be free from some of its disagreeable features. Substances containing sulphur were not investigated, as it seemed likely that all such substances would impart an unpleasant odour or taste. Carbimide, a substance which has been known since at least 1914 to cause a disagreeable reaction with alcoholic beverages, was finally chosen. Carbimide compounds have been used industrially for decades, with few toxic effects other than the *mal rouge* when the unfortunate worker took alcohol. A number of different

carbimide derivatives were evaluated. Calcium carbimide was found to be a relatively stable compound, but it needed to be administered in a slow-release tablet. The drug is also combined with citric acid to provide a pH below 4 or 5, thereby slowing the breakdown of the carbimide to ammonia. The formula is as follows:

$$Ca = N - C = N \rightleftharpoons COOH\ C(OH)\ (CH_2\ COOH)_2$$

Calcium Carbimide — Citric Acid

The action of citrated calcium carbimide (C.C.C.) is said to be due to the inhibition of one or more enzymes which are required to oxidize acetaldehyde. Therefore, when C.C.C. is given in a suitable dose before an alcoholic drink, acetaldehyde, which is an intermediate product in the oxidation of alcohol, accumulates in the blood. However, it is now thought that the sensitizing drugs not only cause an accumulation of acetaldehyde, but also alter the vascular reaction to acetaldehyde (Ferguson, 1956).

Present Investigation.

The group chosen for study consisted of 45 males and four females. They were all chronic alcoholics in hospital, with a history of problem drinking ranging in duration from three to 35 years. Their average age was 38 years. They were told that the medication to be used was under trial, that its activity was similar to that of disulfiram, and that they would be expected to undergo one or more alcohol tests. About half the patients who were approached regarding taking the drug and undergoing the tests agreed to participate. No attempt to persuade the remainder was made, as it was held that only volunteers should be used.

The effects of the administration of C.C.C., (*a*) followed at a number of time intervals by various doses of alcohol and (*b*) taken alone, were studied in detail.

C.C.C. Followed by Alcohol.

J. A. Smith *et alii* (1957), in a study of 73 male alcoholics who were given C.C.C., stated that a single dose of 50 mg. of the drug sensitized an individual to alcohol. However, a few early pilot studies soon showed that this was generally inadequate, and the standard test was the administration of 100 mg. C.C.C. (two tablets) followed an hour later by 2 oz. of brandy. Observations of a number of signs and symptoms, including recordings of the pulse rate and blood pressure, were made at ten-minute intervals after the alcohol had been taken. As the number of women was so small, they were considered collectively with the men.

The results are shown in Table I. However, this table does not do justice to individual cases. It was found that in six instances there was no recordable result at all, and in 16 there occurred only slight flushing, palpitations, dizziness or lethargy. On the other hand, there was a rather pronounced drop in the blood pressure, especially the diastolic pressure. Despite the statements of some investigators, "acetaldehyde shock" does occur, and in four of our cases the drop in blood pressure was of the order of 40 mm. of mercury, systolic, and 50 mm., diastolic. In all four cases the objective findings were sufficient to cause concern. Three patients became cyanosed and developed generalized tremor with "chilling" and marked apprehension and restlessness. In each case the patient eventually fell into a deep sleep, which lasted up to two hours. In two cases in which they were used, an intravenous injection of an antihistamine and, after 20 minutes, the injection of 5 min. of 1:1000 adrenaline, gave no relief.

From these 49 patients, seven were selected at random (excluding those four who had a very severe reaction in the initial test) to determine the effects of increasing the dose of C.C.C. Of these seven cases, the initial test reaction was nil in one case, slight in four and moderate in two. The subjects were tested with two ounces of brandy, (*a*) one hour after taking 200 mg. (four tablets) of C.C.C., (*b*) one hour after taking 300 mg. (six tablets) of C.C.C. Similar observations as with the standard test were made.

In comparing the results with the previous recordings on the same patients when the smaller dose was tried, only generalizations can be made. However, after 200 mg. of C.C.C., the results were classified as nil in one case, slight in two cases and moderate to severe in four cases. Strangely enough, there did not appear to be any increase in the severity of the reaction when the dose was increased from 200 to 300 mg. Although there was an over-all increase in severity of the signs and symptoms on these two higher doses compared with the standard test dose, this was not so to an alarming degree. Increased dizziness and a more constricted feeling in the chest were the most usual complaints. Recordings of the blood pressure and the pulse rate did not show significant change. One very stolid patient still had no reaction other than an increased pulse rate, and this was probably attributable to the neat brandy.

Because of these findings, it was thought that varying the amount of brandy might produce greater effects than varying the amount of C.C.C.

This was also suggested by the fact that one of the patients under study had visited the local hotel on an afternoon after his standard test, and had consumed three-quarters of a 26 oz. bottle of port wine. He drank this in about 15 minutes. Within a few minutes he had a very severe reaction, with acute dyspnœa, dizziness, apprehension and nausea. This was followed by a deep sleep of four to five hours. When he awoke, he still felt a little dizzy and nauseated. This reaction, although it could not be measured, appeared to be much more marked than in his original test.

This is a most important point, as most investigators pay little heed to the amount of alcohol when testing any of these "protective" drugs. It is of no value to deduce that one of these drugs is safe when tested with a comparatively small amount of alcohol in a hospital, when it is well known that these patients are likely to consume large quantities of alcohol impulsively.

For the purpose of this test, the same seven patients were tested with 6 oz. of brandy one hour after taking 50 mg. (one tablet) of C.C.C. The dose of C.C.C. was reduced in this instance, as there was some concern about the possible consequences. This reaction was definitely more severe than with 100 mg. of C.C.C. followed by 2 oz. of brandy, and was comparable with that obtained with 200 and 300 mg. of C.C.C. followed by 2 oz. of brandy.

With regard to variation of time, the same seven patients were tested 16 hours after taking 100 mg. of C.C.C. There appeared to be a slight falling off in the severity of symptoms and signs as compared with the one-hour test. They were then tested 40 hours after taking 100 mg. of C.C.C. At this stage only three of the seven showed any reaction at all, and even then it was only a very slight one. This suggests that sensitivity to C.C.C. is lost much more rapidly than sensitivity to disulfiram. C.C.C. appears to have no appreciable cumulative effect, as the seven patients who were tested with 2 oz. of brandy after taking 100 mg. of C.C.C. daily for seven days reacted almost exactly as they did when tested an hour after taking 100 mg. of C.C.C.

There are other important results that cannot be tabled. During the course of the testing—three to four weeks—eight patients commenced drinking again. This could be interpreted as a reactivation of the "craving", as the C.C.C.-alcohol reaction is usually comparatively mild (Glatt, 1959). However, we thought that this was often a rationalization on the part of the defaulting patient.

Another point of interest is that three patients, on each day when they were tested, became flushed after the evening meal (eight hours after the test). Whether this was due to condiments or a secret "nip" was never discovered. However, the latter was suspected.

Patients who had previously had treatment with disulfiram or related drugs are now discussed.

CASE I.—This patient had very little reaction at the initial test. He had previously had a test with disulfiram at another hospital, and had been maintained on the drug for

TABLE I.

Observations at the Stated Time Intervals on 49 Subjects (45 Men and 4 Women) Receiving C.C.C., 100 mg., Followed One Hour Later by Brandy, 2 oz.

Reaction.	15 Minutes.				25 Minutes.				35 Minutes.				45 Minutes.			
	Nil.	Slight.	Moderate.	Severe.	Nil.	Slight.	Moderate.	Severe.	Nil.	Slight.	Moderate.	Severe.	Nil.	Slight.	Moderate.	Severe.
Flushing	9	23	11	6	8	20	15	6	8	18	17	6	8	28	10	3
Palpitations	20	26	3	—	14	30	5	—	17	27	5	—	18	28	3	—
Nausea	49	—	—	—	49	—	—	—	46	—	3	—	46	—	3	—
Vomiting	49	—	—	—	49	—	—	—	49	—	—	—	48	—	1	—
Headache	43	6	—	—	43	3	3	—	43	3	3	—	43	3	3	—
Lachrymation	16	24	9	—	14	26	9	—	12	28	9	—	15	27	7	—
Constricted feeling in chest	34	11	4	—	24	16	9	—	38	8	3	—	40	6	3	—
Difficult breathing	45	4	—	—	45	4	—	—	46	3	—	—	47	2	—	—
Choking feeling	49	—	—	—	47	2	—	—	47	2	—	—	48	1	—	—
Sleepiness	49	—	—	—	43	6	—	—	29	12	8	—	14	15	16	4
Dizziness	45	4	—	—	35	10	4	—	24	15	6	4	28	13	4	4
Average fall of blood pressure from basal level (mm. of mercury):																
Systolic	22				24				21				12			
Diastolic	30				33				28				16			
Average rise in pulse rate from basal level (per minute)	42				40				32				26			

some time. However, he also held disulfiram in contempt—"I could still drink". This patient was one of the defaulters, and blamed the test. To a certain extent he was probably correct as he was obviously enjoying the test.

CASE II.—This patient was extremely distressed by the test. He said that his sensations were much the same as when he had been tested with disulfiram four years earlier. He is grossly neurotic and is addicted to barbiturates and carbromal as well as to alcohol, so that he was probably not a very suitable subject.

CASE III.—This patient had been tested with disulfiram in 1954. Subjectively, he felt that the disulfiram reaction was more severe, but that the C.C.C. reaction (which could be described as moderate) would be sufficient deterrent.

CASE IV.—This man had obtained disulfiram from a pharmacist friend and had done his own "testing". However, from his description, he had taken an inadequate amount of disulfiram. Therefore, the fact that his reaction with C.C.C. was apparently more severe was probably not valid.

CASE V.—This man, on whom the test appeared to have absolutely no effect, had not had disulfiram, but a powder that he bought after seeing an advertisement in a magazine. This, plus whisky, made him "so dizzy and delirious that I had to give it up" (the powder, he meant).

CASE VI.—This man had had disulfiram put secretly in his food. The fact was later disclosed to him. Disulfiram made him flushed, dyspnœic and nauseated when he took alcohol. However, it did not deter him from drinking, and his C.C.C.-alcohol reaction was also mild.

An attempt was made to see if any correlation could be found between the severity of the C.C.C.-alcohol reaction and addiction to spirits, wines or beer predominantly. Glatt (1959) stated that the disulfiram-alcohol reaction was more severe in beer-drinkers than in spirit-drinkers. However, Australian alcoholics appear to be very unbiased drinkers and indulge impartially in any form of alcoholic drink. When a rough grading was made, no correlation was found.

In general, the signs and symptoms of the C.C.C.-alcohol reaction begin within 15 minutes, reach their maximum after about 35 minutes and then abate. However, they are still in evidence at 45 minutes. Although the blood pressure normally has fallen after 15 minutes (as shown in Table I) there is often a transient rise in the first few minutes. This is probably the effect of rapidly drinking the neat brandy. Nausea and vomiting are not very noticeable features of the C.C.C.-alcohol reaction. This is a marked contrast to the disulfiram-alcohol reaction. In general, the more phlegmatic patients had the less severe reactions.

For what it is worth, 34 of the patients said that the C.C.C.-alcohol reaction in their case was severe enough to deter them from drinking if they had previously taken C.C.C.

C.C.C. Taken Alone.

The side effects recorded with C.C.C. taken alone are as follows. Only 14 patients have been taking the drug for longer than two months, and the effects in relation to these are as follows:

Giddiness and palpitations	2 cases
Dizziness	1 case
Blackouts	1 case
Abdominal pain (ill-defined)	1 case
Bad taste	2 cases
Coated tongue	8 cases
Itchy skin	2 cases
Drowsiness	9 cases
Frequency of micturition	1 case
Constipation	1 case

While none of these effects are severe, they are still of nuisance value and need to be taken into consideration in the total management of the individual patient. Many more patients have taken the drug for a shorter period of time, and their side effects appear to be approximately of the foregoing order.

Discussion.

It would seem that with C.C.C., sensitivity to alcohol commences within the span of one hour, whereas it is well known that sensitivity with disulfiram takes a matter of days. On the other hand, sensitivity with C.C.C. is lost much more rapidly than with disulfiram. A patient taking disulfiram can be reasonably expected to have a reaction with alcohol three to four days after discontinuing the drug. Reactions have been reported up to 14 days after its discontinuance. Because of this rapid loss of sensitivity, it may be advisable to administer C.C.C. in a dosage of 50 mg. twice a day.

In view of the relative mildness of the C.C.C.-alcohol reaction, the possibility of reactivating a "craving" is a danger. This is particularly likely when dealing with out-patients. Increasing the dose of C.C.C. beyond 200 mg. does not appear to increase the toxicity of the alcohol reaction, provided that the dose of brandy is kept at 2 oz. However, increasing the dose of brandy to 6 oz., even when the dose of C.C.C. is reduced to 50 mg., will produce a surprisingly severe reaction. It is therefore thought that one should be rather cautious about airily dismissing the C.C.C.-alcohol reaction as being "mild" on the basis of one test under hospital conditions, as a most untoward reaction may occur if the alcoholic goes on a "bender".

Consequently, the warning issued many times about the danger of administering disulfiram without a patient's knowledge applies also to this drug. It is also suggested, on the basis of the introduction to this paper, that it is probably not of any value to coerce patients into taking any of these "protective" drugs. Although some North American clinics make the taking of these drugs mandatory, and some European clinics associated with courts require a patient to report daily for his disulfiram, we consider that only those with sufficient motivation would benefit.

There is no significant cumulative effect with C.C.C., and it is our impression that the side effects are less than with disulfiram. Certainly, the side effects reported here are much less prominent than those described with disulfiram by Glatt (1959). In Glatt's table, and in his review of 69 cases, fatigue, headache, dizziness, shortness of breath and gastro-intestinal symptoms were present in various proportions in about half the cases. However, the assessment of side effects is notoriously difficult, and too much stress should not be placed on bare figures.

As the *mal rouge* of the C.C.C.-alcohol reaction is usually in evidence even when other symptoms and signs are not, it may be cynically suggested that the drug be used as a method of detecting secret drinking in our open alcoholic wards.

Summary.

1. This study suggests that C.C.C. fulfils reasonably well most of the criteria of a "protective drug" in the treatment of alcoholism.

2. It will almost certainly play a definite, but limited, role in the treatment of alcoholism.

3. It is unlikely that any "miracle" substance will ever be produced that will take the place of genuine motivation.

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THE IMPACT OF PSYCHOANALYTICAL THEORY ON EDUCATION.[1]

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THE preceding 60 years have shown very clearly that it is impossible to be lukewarm about psychoanalysis. This is hardly surprising when we consider the basic stuff of psychoanalytical theory: the sexual instincts (and in particular the sexual life of children), rivalry and aggression, parent-child relationships — all are topics in which every human individual is profoundly and inextricably involved, however much we may wish to deny it. The disruptions and disagreements which took place between the early members of the psychoanalytical movement are by now ancient history, and the Freudians, the Jungians and the dwindling band of Adlerians have been in irreconcilable opposition for several decades past; even within the more traditionally orthodox Freudian camp there are still basic and important differences of opinion which occasionally flare into open hostility. Much is made of these antagonisms by hostile critics of the analytical movement, who prefer to ignore discreetly the equally striking gulf existing between many non-analytical students of human interaction; the differences have often been exaggerated for an ulterior motive, the large areas of fundamental agreement all too frequently ignored. It is doubtful if a pioneer worker in any field of scientific endeavour has ever been as frequently and as seriously misquoted as Freud; volumes of highly critical and at times frankly scurrilous material appear from time to time which seem largely based on a complete misunderstanding of his basic concepts, despite their extremely careful and readily accessible documentation. The psychoanalytical movement itself cannot be held to be entirely free from responsibility for this sordid turn of events; its ex-cathedra pronouncements, often based on flimsy generalization, and its taking unto itself the role of sole storehouse of absolute truth — these things can be infuriating to its warmest supporters.

These are secondary, not primary, problems, however, and serve but to confuse the basic issue — namely, that there is by now firmly established a solid core of knowledge bearing on human behaviour in health and sickness, which has been derived from psychoanalytical observations, and which has been repeatedly confirmed clinically, and which is obtaining further support from an increasing trickle of experimental researches. Those modern reactionaries, of which H. J. Eysenck is perhaps the most vociferous, can never succeed in turning back the clock to what would be, in effect, pre-Freudian concepts of human behaviour.

It is not necessary here to discuss the various controversies which surround the use of orthodox psychoanalysis as a therapeutic technique; it is somewhat paradoxical that in this area, from which all subsequent developments began, some of the gravest doubts may legitimately be raised about the practical value of analytical theory. The unique quality of Freud's work lies in its virtually universal applicability; it has illuminated the social sciences at whatever points it has been allowed to make contact, and by virtue of the insights it provides into the normal processes of child development, it has a profound importance for all those who are concerned with education — the high-level administrator, the teacher, the parent. Its importance does not diminish the significance of the researches of teachers themselves or of non-analytical psychologists, but is supplementary to them; in any event, learning theory is far from incompatible with analytical views on child development, as Dollard and Miller (1950) and Mowrer (1950) have begun to show — I believe we can confidently predict a further integration of the knowledge of these two disciplines in succeeding years. Neither is Freudian psychology in any way incompatible with recent advances in the study of brain structure and

[1] A paper read to a joint meeting of the New Education Fellowship and the New South Wales Association for Mental Health in the Robert H. Todd Assembly Hall on August 11, 1959.

function; it is conveniently overlooked that Freud himself clearly saw, right from the start, that his conceptualizations in psychological terms were but a shorthand form of expression for complex happenings within the brain cells, which we are still very far from understanding.

From these generalizations we must now pass to the particular, and must examine the basic propositions of analytical theory in specific relation to their relevance for the teacher and for the educative process generally. Such a review must be far from exhaustive in the time available and may at times appear over-dogmatic, as insufficient opportunity exists to produce much of the important evidence from which we are enabled to draw our conclusions.

The aspects of analytical theory which are of most vital concern are considered in the following discussion.

Determinism.

Most modern psychology is deterministic in its essence, none more strictly so than that of the psychoanalytical school. This implies that each event in our mental lives has a precise and potentially definable relationship to those events which have preceded it and which will follow on from it; there is no need for, and no room for, any factors to explain human behaviour other than the interaction of basic needs and hereditary endowment with environmental influences. The relevance of "chance", "coincidence" and "free will" as causal factors in human action is explicitly denied. The child is as he is, not because he chooses, but because he is literally unable to be any different; his own internal motivating forces, plus his family and social background, have left him no alternative.

The relevance of this for the teacher is obvious — once he has brought himself, if he can, to accept it, with the possible shattering of some of his most cherished illusions about his own life and development. It means a real, personally reasoned acceptance of the need to examine, whenever necessary, the forces operating to produce disturbed or antisocial behaviour in childhood, and leads to a permanent inability to fall back on glib categorizations of children as "good" and "bad", "lazy" or "stubborn" — terms which remain useful for their descriptive value, but the employment of which may completely block any real exploration of the child's motives and conflicts. I say that this acceptance of the child must be "personally reasoned" from a sad experience of the rejecting, critical and moralistic attitudes towards children which may lurk beneath comfortable, intellectualized chants, such as "There are no problem children, only problem parents". Determinism is a tough philosophical taskmaster, but the only one which brings really rewarding results in terms of understanding.

The Role of the Instincts.

From the earliest period of his existence, the developing child will experience unpleasant feelings when placed in situations where his body is flooded with sensations which he is unable to master — unpleasant feelings which, in adult terminology, are labelled as "anxiety". Possibly the act of birth itself provokes "anxiety" in this sense of the term; certainly it must be early aroused by sensations of hunger which the infant is unable to regulate without outside assistance. The instincts are a regular, biologically derived source of such tension; the young child shows clearly at times that he finds such inescapable instinctual stimulation frightening, and certain immature, neurotic adults never completely lose this fear, being consciously or unconsciously ill at ease on the occasion of the arousal of their own instincts or the instincts of others. Such people are often at great pains to deny the importance of the instinctual life.

The most troublesome instinctual manifestations, from early childhood on, are those related to aggressive and to sexual drives. Despite persisting disagreement concerning the origin of aggressive feelings — whether as a primary instinctual manifestation or as a response to frustration — evidence for their existence and importance is overwhelmingly strong, even at a simple observational level. We cannot review here all the evidence for the occurrence of infantile sexuality—no segment of analytical theory has aroused more antagonism, part of which (though by no means all) is based on a misinterpretation of Freud's term "sexual" as if it referred to sex behaviour of an adult type, instead of a much more general description of the easily observed erotic pleasure which the young child derives from certain excitable areas of his own body, and also from his relationships with other persons and with certain objects. The arousal of pleasure of the type which Freud calls "libidinous" from sucking and from excretory activities, the intensity of early sex curiosity and of interest in bodies — his own and other people's — the attachments which he develops towards parent figures which have a substantial "sexual" component — all these can be observed by any intelligent and clear-sighted parent, as well as recurring inevitably in the retrospective reconstructions of child or adult analysis.

The very young infant seeks only for the discharge of this instinctual tension, and is said to act in accordance with what is known as the "pleasure principle". He is, at this stage, motivated in what are to adults completely illogical ways; because of his inability to tolerate anxiety he periodically indulges in random motor activity for the purpose of securing the discharge of instinct tension. (It is worth noting that many of our more orthodox schools fail to provide sufficient motor outlets for the group of children who particularly favour this form of discharge.) Even with the formation of the ego, which we will shortly discuss, and the subsequent ability to function in accord with what is termed the "reality principle", occasional outbursts of more primitive, "primary process" material will be seen at times in all normal children, particularly in the five-year to seven-year age group and in early adolescence; without apparent purpose and in the absence of any explanatory triggering factor, the child talks in a nonsensical fashion and indulges in violent non-destructive activity, all of which serves the purpose of a safety valve for instinct tension release. (The popularity of cartoons with children of various ages, and with adults, lies in their ability to provide an outlet for primitive, illogical emotions.) The experienced teacher will permit, though not actively encourage, discharges of this nature — but he will note that behaviour of this kind occurring too frequently or at inappropriate times suggests very strongly that too much pressure is being brought to bear on the child's control devices.

The Reality Principle.

The child must soon realize that his primarily pleasure-seeking behaviour must be modified by the real exigencies of the external world; such a step along the road to maturity is vital for him to be able to profit from learning, and is favoured by an atmosphere of love and security in which he can develop the capacity to postpone his gratifications. If reality is consistently harsh, the more he will be reluctant to perceive the external world in real terms and the more, therefore, he will wish to content himself with an unreal, fantastic world.

In the development of this system of controls over his primitive needs, that portion of the psychic apparatus known as the ego plays the predominant role, and more and more attention has been devoted in recent years to the various "ego defences" which are used to make this control possible.

Sublimation.

The healthiest by far of these defences is sublimation, which deflects the basic instinct from its original aim and permits discharge in socially acceptable ways. In adolescence and adult life we are day by day made aware of this mechanism through the enormous popularity of crime fiction, romantic and vaguely pornographic novels and magazines, violent sports such as football and boxing, all of which provide outlets for sexual and/or aggressive impulses in ways which are tolerated by our culture. It

is less widely appreciated that such sublimations are a constant and essential feature of the educative process — that, for instance, the creativeness of the normal child represents, in part at least, a sublimation of basic instinctual drives. Teachers, for various understandable reasons, are often reluctant to look at the proposition that the child develops interest and pleasure in various cultural activities at least partly as a substitute and recompense for the prohibition placed on the gratification of biologically determined wishes. Human existence can never escape from its basic biological roots, and our highly complex westernized society provides innumerable obstacles to their adequate release. However desirable and essential are the various educational skills in order to enable us to live in such a society, there is little point in our trying to pretend that they are basic biological necessities; our cultural development is a superadded phenomenon, in the organization of which sublimation plays an important, though not by any means exclusive, role.

Other defence mechanisms of the ego which are important for the processes of education are repression and reaction formation.

Repression.

Repression is the process of unwitting forgetting which buries various portions of our past experience in the unconscious segment of our mental life; those feelings and wishes tend to be forgotten which would be unacceptable to our conscious mind. If this mechanism is used in an extreme form, subsequent personality development is crippled, often severely deformed. Its importance for educational theory lies in the fact that satisfactory learning requires a free passage of knowledge and old information from the unconscious to the conscious segments of the mind; too great a use of repression leads to inadequate memory function, and is likely to occur when instincts have been forced to remain in a state of repression and have, in effect, kept with them various otherwise useful ideas and pieces of information which in some way have an unconscious connexion with the instinct itself.

For example, an intensely musical little girl was one day an unseen witness of an episode of love-making between her parents while her mother was playing the piano; her interest in good music was cut off abruptly and was not able to find free expression until much later in life, when the repressed incident gained access to consciousness. The fact of instinct arousal was subject to repression, and with it went the knowledge and interest which were associatively linked with it.

However, it does not follow from this that repression is therefore unequivocally detrimental to the child's development, or that it is a desirable aim of child training and education to discourage the child absolutely from using repressive mechanisms. To the unfortunate results of this misconception, and the accompanying catch-cry of "complete freedom for the child", I will return towards the close of this paper.

Reaction Formation.

Reaction formation is the ego defence mechanism by which unacceptable instinctual impulses are transformed into long-lasting tendencies which express the very opposite aims to those of the basic instinct, and which usually stay in command for the remainder of the individual's life. In extreme form, the result is a great restriction on the individual's capacities, and especially on his creativeness. The grossest examples occur in what is known to clinical psychiatrists as the "compulsive personality". These are usually very unhappy people whose lives are cramped and distorted by a series of rigid blocks against any kind of genuine instinct expression. Such people — and they may be children — may appear, for example, to be excessively prudish, as a reaction formation against their feared sexuality, or conspicuously passive and timid as a defence against frightening unconscious aggressive impulses.

To some extent, however, our cultural pattern requires and favours the development of this mechanism, and it is sometimes said to be, in limited extent, essential for the type of character building our civilization demands. Certainly social reformers often take up with much fervour their own particular causes because of this type of personality development; they may defend themselves against unconscious envy and jealousy, repudiated as motives, by the "desire to see all men equal".

A patient who has been extremely active in various campaigns for the abolition of capital punishment came to see, during the course of his treatment, that these social passions were developed as a defence against acknowledging his own murderously aggressive fantasies.

Nevertheless, the point must be made that the desirability of reaction formations has been much overemphasized by the traditional authoritarian school of educationalists; discipline of an inflexible type, applied either too severely or too early or both, favours strongly the development of rigid, crippling defence measures of this nature. The crucial attitudes arise in the pre-school age period, and particularly at the time of toilet-training, as a result of the various conflicts at this time about the importance of "control" of excretory activities in particular and instinct gratification in general. Excessively strict, controlling parents, therefore, are usually the ones to set the initial tight seal on personality development — but still too often the experiences of the class-room give the screws a few tight, savage turns. Our children cannot remain uncivilized — but we must not over-emphasize the demands of our culture.

The organization of the defence systems of the ego, therefore, leads to the supplanting of the pleasure principle in pure form, enables the child to postpone immediate gratifications for the sake of a long-term goal, modifies the child's behaviour according to the demands of the external world and in addition gives him a sense of secure personal identity. Adequate ego development leads to the ability to exercise the functions of discrimination and logical judgement, and is clearly a prerequisite for the satisfactory development of learning.

Identification.

The child in the normal course of development takes over many of the characteristics of those powerful adults with whom he comes in contact; most particularly he should identify with the parent of the same sex, as extensive cross-sex identifications are inevitably associated with a greater or lesser degree of distorted personality growth. This process is very closely related to the need to learn; the child envies the strength, the omniscience, the apparent freedom from anxiety which he attributes to the adult, and determines to be as like him as he possibly can. Because he identifies with the teacher, he is prepared to learn various segments of academic knowledge which have little immediate appeal for him, however interestingly they may be presented. In the short-term view he wants to learn partly to be rewarded by teacher's love; long-term, there is a need to be like his father and to have the same skills, perhaps even to surpass him. These valuable identifications, it must be stressed, take place most easily and naturally in the presence of a love relationship; if the child feels resentful and aggressive towards the teacher, or is frightened of him, the learning process may be seriously impeded. It is obvious that he may develop these angry feelings about his teacher because the teacher is like this in reality and makes these sorts of feelings inevitable; but in other circumstances such attitudes may be derived from his relationship with another adult (usually his father), and only secondarily transferred to the teacher. All aspects of the teacher's personality tend to be incorporated, and this state of affairs may be especially harmful if it tends to reinforce abnormal character traits of the child's parents.

Rivalry and Aggression.

It has been previously noted that aggressive, angry feelings are part and parcel of the emotional equipment

of every young child — this statement will hardly be revolutionary news to primary school teachers. The mature mother knows that, if occasional direct outbursts of this anger are not permitted, it will certainly emerge anyway in disguised and in the long run more difficult forms such as passive resistance, feeding difficulties and generally "contrary" behaviour. Similar principles are recognized by the secure teacher, who is not unduly perturbed by occasional episodes of aggressive behaviour from his young pupils.

Very obviously, however, jealousy, resentment and anger must be reduced to their proper place in the scheme of things for the child to become normally civilized. (It is, incidentally, one of the grossest paradoxes of our culture that open aggression is at times severely censured, at other times rewarded with an appropriate military decoration, and is in some degree essential in any event for satisfactory advancement in our competitive type of world.) A good deal of aggressive feeling can be sublimated in various games as well as in more creative hobbies and crafts, but one of the most natural forms in which these instincts can find a culturally approved form of outlet is in the development of healthy competition and rivalry. There can be little doubt that these tendencies will continue to exist, however much some of our educational reformers attempt to eliminate them from the school scene. The modern teacher at times gives the impression that he acts as though the aggressive instincts did not exist, instead of acknowledging their reality and finding acceptable outlets for them. If objective rewards in the form of marks or gradings are abolished, competitive rivalry for the teacher's love and approval will inevitably take some other form — and perhaps a less desirable one.

Difficulties in Learning.

It has already been stated that the process of learning is a function of the ego. Freud himself was aware that certain parts of the ego, such as intelligence, perceptual and motor equipment and special gifts, were the result of innate endowment, and this concept has been further developed by Heinz Hartmann (1950), who refers to this segment as the "nonconflictual" part of the ego, in contradistinction to those elements of the ego which arise in the manner described above as a result of the adaptation of primitive instinctual desires to the demands of the external world. Both segments of the ego may be involved in various types of neurotic conflict; it is well known, for example, that even basic intellectual endowment may be grossly interfered with in its development by emotional difficulties — all are not feeble-minded who appear to be so.

Some of the conditions for normal learning have been described or hinted at earlier in this paper; there must be present the capacity for adequate sublimation, and repressions and reaction formations should not be too extensive; there must be a positive flow of warm feelings from child to teacher; there must be all round an ego strength adequate to permit the child to deal with "primary process" material and prevent its intrusion to any great extent into the work situation. It is also a fact that the child's need for love, which he requires to maintain his self-esteem, is a prime consideration in making him teachable at all; he will renounce short-term satisfactions if rewards of love are promised or if withdrawal of love seems possible if he does not learn.

When the child fails to learn, and common observation or formal intelligence testing shows that this is not related to deficient intellectual equipment, psychoanalytical knowledge leads us to consider one or a combination of the following contingencies, some of which may not become readily apparent until the stage of secondary schooling has been reached:

1. The material to be learned may not be sufficiently attractive and interesting, and thus may encourage recourse to wish-fulfilling day-dreams and even, in some instances, to a sliding back in the developmental scale.

2. Attention is unable to be concentrated upon the material to be learned; this may arise because other external distractions seem to offer a better prospect to the child for sublimation or direct instinct discharge, or because he is primarily distracted by internal unpleasant feelings due to unsatisfied instinctual tension. This may be particularly striking in early adolescence, owing to the refuelling of the instinctual fires by the changes of puberty. Particularly at this time, though at other periods as well, strong emotions of guilt, shame and fear will seriously interfere with learning, even though these emotions may be far from fully conscious. If the ego has to devote a major part of its energies to repression, there may be little left for the acquisition of knowledge.

3. Freud has convincingly described a type of neurosis in which success and achievement provoke anxiety; clinical examples of this are not hard to find, and are based on chronic feelings of guilt which induce a need for self-punishment (Freud, 1916). Such children (or adults) feel comfortable only when the world treats them badly and rewards are denied to them.

4. Immature, dependent children may not wish to grow up, and may unconsciously reject learning for fear of losing the privileges of childhood.

5. Curiosity is an essential basis for learning; the original curiosity about bodies in general and sex in particular is transmuted in various ways into more intellectual forms of inquisitiveness. If the child has been punished or humiliated for early curiosity, or if his inquisitive searches have led him to discover things which frighten him, all later curiosity may be seriously blocked. In other instances, however, and for reasons which are admittedly uncertain, such frustrated infantile curiosity is sublimated into an intense interest in the acquisition of academic knowledge. Experienced teachers hardly require to be told that the child who is too interested in his work may also be seriously emotionally disturbed.

6. Parental influences and expectations may greatly influence the child's attitudes to learning. Pearson (1954) quotes the case of a boy whose mother was intensely interested in her child's education, but whose father was indifferent; the boy came to regard the desire to learn as a feminine attribute. It is even more common to see neurotic young women whose history reveals that, rejecting feminine patterns of behaviour from an early age, they have identified with the seemingly more intellectual father and have voraciously pursued knowledge as a substitute for the masculinity they cannot have; like many substitute goals, it is all too often found in later life to be an empty vessel.

7. It has been stressed that learning is possible only when the developing child has reached a position in which he is able to employ the function of judgement and to act at a level other than that of the pleasure principle. Anna Freud (1946) has stressed that a real goal of education is to increase the child's tolerance of frustration; conversely, the child who is unable to tolerate frustration will be unable to learn. If his environment has been such that he has always been permitted free instinctual gratification, he will become extremely anxious when placed in the school situation where a considerable degree of instinct frustration is inevitable in the ordinary course of socialization. The long-term result of this state of affairs may be quite disastrous, both for his acquisition of knowledge and for his ultimate stability of character. Fenichel (1946) points out that, if the teacher (or parent) falls over backwards to avoid frustrating the young child, in later life such an individual will be strikingly intolerant of the normal frustrations which are inseparable from a civilized life.

The Moral Development of the Child.

Space does not permit any extensive review of the manner in which the child's conscience is developed, or of the detailed factors which operate to produce the child's, and later the adult's, picture of himself and the degree

of comfort which he has about his own personality. Ernest Jones (1948) gives a good review of this topic. Let us stress here only one aspect of this—namely, the intense importance of the fact that the child's moral standards, his conscience and therefore his self-esteem — all these things arise out of the experiences to which he is exposed during the course of his development, rather than being inborn. Psychoanalytically minded psychiatrists, popularly regarded as being tantamount to free-thinkers and free-lovers, are sometimes reproached with neglecting this aspect of child development. Nothing could be further from the truth, yet their viewpoint is inevitably coloured by the fact that for every one patient a psychiatrist encounters whose conscience is under-developed, he meets 10, 20 or more who are periodically or chronically ill at ease by reason of the fact that their "still, small voice" has become a persistently reproachful roaring noise in their ears. Such people are riddled with neurotic inferiority feelings, perpetually guilty, make poor relationships with others, and have a permanently inadequate valuation of themselves as individuals. There is a healthy degree of egotism which both parents and teachers require to foster, and which may be too severely inhibited either by the setting of impossibly high standards for the child to attain, or by too drastic restrictions on the natural self-assertiveness of children.

The question is often asked: how important is physical punishment in this connexion? From my own experience with neurotic adolescents or adults who talk in treatment about their school days as an important factor in their disabilities, it is only the rare instances of repeated, severe physical cruelty which are stressed; far more importantly the significant aspects are seen to be the personal humiliations, the losses of status and the evidences of lack of interest or of trust. Too much stress, in my view, has been laid on the presence or absence of physical methods of discipline, and far too little on the teacher's capacity to inflict more serious punishment through sarcasm, ridicule and all the other methods which may induce inferiority feelings far more readily than an occasional moderate physical punishment.

The Nature of the Impact.

In this country at any rate, and probably throughout the world, even including the United States, the direct impact of psychoanalytical knowledge upon the theory and practice of education has been in general remarkably small. Educational policies have, of course, been considerably liberalized in the last half-century, under the influence of various contemporary forces of which psychoanalysis has been one; but there is still very little evidence in classroom practice, educational philosophy or teacher training that the specific lessons of dynamic psychology have been engaged, let alone married, to the needs of the teacher. This is all the more unfortunate because, as Pearson (1954) emphasizes, psychoanalysis and education have fundamentally "the same end in view — to enable the person to live comfortably with himself and in a social group".

One aspect of the impact has been particularly unfortunate — that is, the recurring tendency to distort analytical teaching to justify a complete overthrow of all the good that still remains in the traditional educational framework and to substitute a completely permissive régime of child rearing, both in the home and at school, which has no foundation whatsoever in Freudian teaching or elsewhere. If the child is brought up in an atmosphere of total freedom and unrestricted instinct gratification, an unstable, inadequate ego development will inevitably be the result, and I hope that this paper has repeatedly made it clear that an organized, integrated ego is the first essential for adequate education, in whatever sense the term is defined. Children wish to learn to control their own impulses, and the complete leniency which is sometimes advocated has very frequently in any event a quite paradoxical result which may be seen clinically — namely, an extremely strict conscience concerning instinctual expression and a longing (which may be expressed openly) for some external, stricter form of discipline. Even if such a result does not ensue, children reared in this type of environment are usually unable, as has been said, to cope with the later frustrations of life, tend to be impulsive and reckless, are subject to surges of feeling which may provoke a good deal of anxiety, lack staying power at a dull task and find extreme difficulty in subsequently adjusting to the cultural pattern. Psychiatrists have known for a long time that parents may show rejecting attitudes towards their children in ways other than leaving them on the cathedral steps — perfectionistic attitudes, lack of warm feeling and over-protective "babying" may reveal similar unconscious motives. To this list may be added "neglect in training", for clinical evidence suggests very strongly that such parental behaviour is unhealthy, harmful, and fundamentally rejecting.

Now, of course, I realize that I have run the risk of implying that psychoanalytical researches may favour the severely authoritarian type of educational pattern. This is also far from being the true state of affairs; I hope I have made it clear that too great an emphasis on "control" will cramp and distort subsequent personality development and that, whereas the realities of our cultural pattern must be faced and adjustment made to them, it is unnecessary and harmful for a child to be made to accept the harsh inevitabilities of life too early and too abruptly. The abiding lessons of psychoanalysis have been to show us the complexity and depth of the feelings of children, to give us the insights into their behaviour and needs which only a realization of the strength of unconscious motivation can bring, and to show the way in which various healthy and unhealthy ego defence mechanisms are brought into being and the effects which they will have on the child's future life. Valid differences of opinion may arise concerning curriculum content, type of school, form of discipline and so on, and there is no suggestion that these things are unimportant; but the most vital question of all is how we may most fully understand the needs of the growing child and fulfil them as best we may through our educational system. Towards this goal an appreciation of the significance of psychoanalytical theory is an essential step.

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CORRELATION OF RADIOGRAPHIC FINDINGS WITH CLINICAL FEATURES OF DEGENERATIVE ARTERIAL DISEASE.[1]

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ALTHOUGH it was introduced nearly 30 years ago by Dos Santos (1929), arteriography has been widely employed only in the last decade. Its increasing use in degenerative arterial disease has shown that symptoms of arterial

[1] Read by G. D. Tracy at a meeting of the College of Radiologists of Australasia on June 26, 1959, at Sydney.

ischæmia in the lower limb are almost always caused by occlusions of the main arteries. It has also shown that many of these occlusions are localized in nature, and has led to attempts to relieve them by a number of direct surgical methods.

The use of these various techniques has been discussed in a previous communication (Tracy, 1957). In historical sequence they are: (i) thrombo-endarterectomy, or disobliteration of the occluded segment; (ii) excision and replacement of the occluded artery by a venous autograft, arterial homograft or plastic tube; (iii) by-pass of the occluded segment with end-to-side anastomoses above and below, with one of the above-mentioned materials; (iv) a combination of these techniques. The largest experience in the use of these methods has been that of De Bakey and his associates, who have reported over 2200 such arterial reconstructions with a very high proportion of successful results (De Bakey, 1958).

We propose in this paper briefly to discuss the correlation of radiographic findings with some clinical aspects of arterial disease, illustrating the discussion by reference to patients investigated and treated during the last two years at the Royal North Shore Hospital.

Material.

Of the patients treated for occlusive arterial disease in this period, arteriography was performed on 72, both lower limbs being examined in 32 instances, so that arteriograms of 104 limbs were available for study. All but seven patients in this series were males, the average age being 64 years, with a range from 28 to 83 years.

The arteriograms were designed to demonstrate the main limb vessels as far as the lower end of the popliteal artery, as no direct surgical procedures have been contemplated on vessels of smaller diameter than the popliteal artery. Therefore no information has been obtained regarding the frequency of obstructions in smaller arteries such as the anterior and posterior tibial. It is interesting to note that Lindbom (1950), in a study of autopsy material, found a large proportion of occlusions of these smaller arteries, particularly the posterior tibial artery, in patients without symptoms. In all our patients with symptoms of arterial insufficiency in the limbs, arteriography has demonstrated obstructions in the main arterial trunks proximal to the end of the popliteal artery—that is, in the aorta, or the iliac, femoral or popliteal arteries.

The sites of occlusion are grouped as aorto-iliac, femoral or popliteal, and the distribution of these is as follows: aorto-iliac, 13; femoral, 83; popliteal, 8; total, 104.

Clinical Features.

The earliest symptom of arterial insufficiency is pain after a period of exercise, which is quickly relieved by rest—so-called "intermittent claudication". More serious arterial ischæmia produces pain at rest, which usually heralds the onset of tissue necrosis and gangrene. The clinical features vary greatly from limb to limb, with apparently similar arteriographic features. For example, in six limbs in this series with occlusion of the femoral artery there were no clinical symptoms whatsoever. Also, in many of the cases in Lindbom's autopsy series, in which occlusions of the leg arteries were far more common than coronary artery occlusions, no symptoms had been referred to the legs before death.

Nevertheless, experience has shown that there is some correlation between the clinical features and the site of occlusion.

Aorto-Iliac Occlusions.

Thirteen patients with occlusion of the terminal portion of the aorta and/or the iliac arteries were studied by aortography. In obstructions at the aortic bifurcation or in the iliac arteries, exercise pain is felt in the thigh, buttocks and hip, as well as in the lower part of the leg. Impotence is an important early symptom. However, pain at rest and gangrene are rare in obstructions at this level, and the prognosis with regard to the limbs in these high obstructions is remarkably good (Estes, 1958). Therefore, replacement or by-pass grafts of the terminal part of the aorta and the iliac arteries should generally be reserved for patients aged under 60 years without evidence of heart disease. In this series only one patient developed gangrene in the great toe, and arteriography revealed a further obstruction in the popliteal artery. Thrombo-endarterectomy of the iliac artery, combined with sympathectomy, was successful and allowed a local amputation of the gangrenous digit. Of the remaining patients, only six were submitted to direct arterial surgery.

From a surgical viewpoint, De Bakey has stated that arteriography is not necessary in the pre-operative evaluation of these patients, as in his experience replacement of a thrombosed distal aortic segment or iliac artery is always possible by the use of patent vessels, which he maintains can invariably be found at the time of operation. However, three explorations were carried out by us (two after "failed" aortography) in which extensive occlusion in the iliac and femoral vessels did not allow of any distal anastomoses, and sympathectomy alone was performed. For this reason, it is considered essential to obtain adequate arteriographic visualization of the distal arteries before attempting aorto-iliac artery replacement.

Femoral Occlusions.

The femoral artery was by far the most common site of occlusion (80%). A striking feature is the constant involvement of the distal part of the femoral artery where it passes through the adductor hiatus (Hunter's canal). In many early cases this was the only part of the vessel involved. There is no doubt that mechanical factors play a dominant role in the localization of arterial occlusions. In most other situations, the origin of large branches or arterial bifurcations marks the earliest site of intimal thickening and occlusion. However, no such large branch arises in Hunter's canal, and it has been suggested that the fixing of the artery in the adductor hiatus is responsible for occlusion developing at this site. So constantly is this the starting point for femoral artery occlusion that there seems some justification for mobilization of the artery at this point to try to prevent stenosis. Humphries has adopted this practice in the contralateral limb whenever he performs an arterial graft (Humphries, 1957). However, no statistical data are yet available as to the value of this procedure.

The clinical features of femoral artery occlusion were variable, but claudication was practically always confined to the calf muscle.

As was mentioned before, six patients in this group had no symptoms. Forty-three had claudication in the calf alone, with no pain at rest or signs of marked ischæmia in the feet. Twenty-two had rest pain and/or gangrene. There was no arteriographic difference between these groups, and experience has shown that the arteriographic findings are not of value in determining either the severity of the ischæmia or the level of amputation in the presence of gangrene.

Popliteal Occlusions.

The small number of popliteal occlusions does not permit general observations on the symptoms of popliteal artery occlusions; but it has been noticed that claudication is not so common as in femoral artery occlusion. It occurs in the calf, and in the small muscles of the foot. However, there is a high incidence of rest pain in the foot with gangrene in these distal occlusions, and this is the commonest site for occlusions caused by thromboangiitis obliterans or Buerger's disease, in which the incidence of digital gangrene is high.

The Value of Plain X-Ray Films in Arterial Disease.

Calcification.

Calcification is a frequent finding in occlusive arterial disease, and it is common practice to refer patients for plain X-ray examination of the limb for confirmatory evidence of vascular disease.

It is important to distinguish between medial and intimal calcification.

Medial calcification (Mönckeberg) is a regular, diffuse, fine-grained calcification affecting the whole circumference of the vessel, with a tendency to accumulate in rings. The best examples of this condition in our film library are found in patients with no symptoms of vascular disease. None of the patients in this series showed this type of calcification.

Intimal calcification occurs in irregular, scattered, discrete plaques, and is often confined to an occluded section of the artery. This type of calcification was seen in about 50% of the arteriograms. A scout film should always be taken to demonstrate the presence of calcification before contrast medium is injected. Its surgical importance is that the presence of such calcification may indicate damage to the arterial wall which precludes the operation of thrombo-endarterectomy.

Aneurysms.

Plain radiography is more valuable in the diagnosis of aortic aneurysm than arteriography. A ring of patchy calcification usually delineates the outline of the aneurysm. This may be better seen with the aid of laminagrams. The presence of laminated thrombus lining the aneurysm wall frequently gives a comparatively normal appearance on arteriography. The fact that aneurysms usually weaken and leak posteriorly also increases the theoretical hazards of aortography in this disease. However, if the diagnosis is in doubt, aortography may be necessary to exclude arterial tortuosity or other conditions simulating aneurysm.

Summary.

Plain radiography and arteriography are essential for consideration of operations for direct arterial repair. They do not suffice to determine the extent of clinical symptomatology in the limb. Clinical assessment is far more valuable in determining prognosis and in assessing the level of amputation in the presence of gangrene.

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TECHNIQUES OF ARTERIOGRAPHY.[1]

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ARTERIOGRAPHY has been a well-established procedure for a number of years, but it is only relatively recently that it has been widely employed in this country. Increasing knowledge of the syndromes associated with arterial insufficiency and new techniques for direct arterial surgery have widened the use of arteriography. In many centres arteriography has been done by other than the radiological staff, but there is no doubt that these examinations are more conveniently carried out in the hands of an interested radiologist. Close cooperation between clinician and radiologist in this respect is essential. Many techniques are described, and it is not proposed to review the comprehensive literature associated with various methods. The purpose of this paper is to describe the simple methods that have been found effective in the Royal North Shore Hospital with the available staff and equipment, together with difficulties that have been encountered. The experience obtained is of some 130 arteriographic examinations performed in the last two years, excluding cerebral angiography.

Direct Percutaneous Femoral Arteriography.

Preparation and Position of Patient.

Direct percutaneous femoral arteriography can be done as an out-patient procedure. Premedication is usually not necessary. "Urografin" (60% solution) gives adequate contrast and has proved to be less painful than other contrast media. A test dose of 1 ml. is given intravenously 20 minutes prior to examination. Soft-tissue films for probable vascular calcification are taken. Details of the procedure are carefully explained to the patient; he is warned that the injection may cause a burning pain, possibly severe, down the leg, but that it will last only a few seconds, and he is asked not to move. The pain is usually not severe; but even when it has been severe, this warning has sufficed to prevent movement.

The patient is placed supine with the leg to be examined in the centre of the table. The feet are kept uncovered, so that any changes that may take place may be observed. Care is taken to prevent damage to ischæmic limbs with foam-rubber pads to prevent pressure on heels, etc. Our practice is not to rotate the limb externally. Normally the femoral artery in its upper half follows a course pointing slightly medially away from the line of the shaft of the femur, and the profunda artery slightly laterally towards it (Figure I). If the limb is externally rotated, it is often impossible to tell whether the needle point is in the profunda and the femoral artery is therefore not outlined, or whether there is narrowing of the femoral artery ending in a complete block. It is essential to use a Bucky diaphragm for satisfactory films. Two films are taken. As we have not equipment and films large enough to include the whole limb in a single film, a 17 in. by 14 in. cassette is placed in the tray so that the upper part of the film just includes the hip joint. To allow rapid positioning of the second film, a mark is made on the table to correspond with the cassette being centred on the patient's knee, and a sand-bag is placed on the floor to mark the second position of the tube stand. Vascular surgery is concerned with arteries only down to the popliteal artery, and it is therefore usually not necessary to obtain a film lower than the mid-tibial level. A third film can be taken to include the foot; but it is often difficult to time the exposure to obtain filling of these arteries, especially if there is an arterial block. A cassette changer, of course, would overcome this problem. A lead-rubber screen is lowered from the ceiling to protect the operator, who stands on the head side of the screen (Figure II).

Procedure.

"Xylocaine" (2% solution) is the local anæsthetic agent used. A small skin stab with a knife facilitates entry of the needle without blunting the needle point in the skin. It is important to enter the femoral artery as high as possible, otherwise the needle may enter the profunda femoris. It is necessary to go in about an inch above the skin crease of the groin, and even then on occasions the profunda may still be entered. An eighteen-gauge Luer-Lok needle is used, the point being directed to the patient's feet. One 20 ml. syringe containing saline and another containing 15 ml. of "Urografin" (60% solution) are made ready. A connecting piece of large-bore clear plastic fitted with Luer-Lok ends of the Scott-Charlton variety is used, so that the injection can be given behind the protecting screen. Such ends maintain an active grip on the tube and have a bore equal to the outside dimension of a sixteen-gauge needle. As soon as the artery has been entered, the protective screen is lowered and the syringe containing "Urografin" is connected. The first film is

[1] Read by J. Kalokerinos at a meeting of the College of Radiologists of Australasia on June 26, 1959, at Sydney.

taken at the end of the injection. Isotonic saline is then used to maintain patency of the needle whilst the film is changed and the Bucky diaphragm and tube are shifted. Another 15 ml. of "Urografin" are injected for the second film, which again is taken at the end of the injection. The needle is then withdrawn, and pressure is exerted over the puncture site while the films are developed. We believe that it is better to withdraw the needle at this stage and

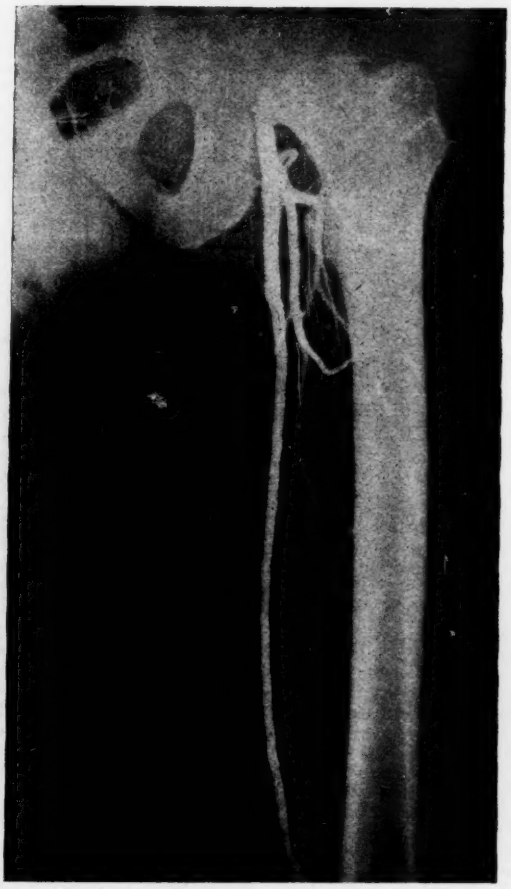

FIGURE I.
Showing the relation of the femoral and profunda femoral arteries to the line of the femur in the antero-posterior position.

to make a second puncture if further films are necessary, as the tip of the needle must cause unnecessary damage to the intima of the artery if left in for a number of minutes. Second punctures are rarely necessary, but up to four have thus been made in the one artery without untoward results. If bilateral femoral arteriography is desired, this is done at the one sitting.

Direct Translumbar Aortography.

Preparation and Position of the Patient.

Owing to well-documented dangers such as hæmorrhage, bowel gangrene, renal damage, spinal artery thrombosis, etc. (McAfee, 1957), direct translumbar aortography should be performed only when it is not possible to perform transfemoral catheterization because of obstruction in the abdominal aorta or iliac artery. The patient is admitted to hospital for the night of the examination. Sedation is effected with sodium pentobarbitone (3 grains), and an intravenous test dose of "Urografin" is given. A 70% solution of "Urografin" is used, a denser medium being necessary than for femoral arteriography because of the dilution that occurs. The patient lies prone with pads beneath the feet. The Bucky tray is centred on the third lumbar vertebra, and the operator stands on the left side of the patient.

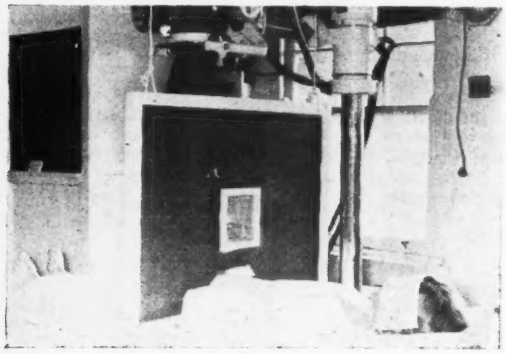

FIGURE II.
Showing lead-rubber screen lowered into position.

Procedure.

Local anæsthesia with "Xylocaine" (2% solution) is effected along the track to be followed. A small skin stab is made to facilitate entry of the needle. If it is desired to demonstrate the renal arteries, the needle entry must be as high as possible, just beneath the left

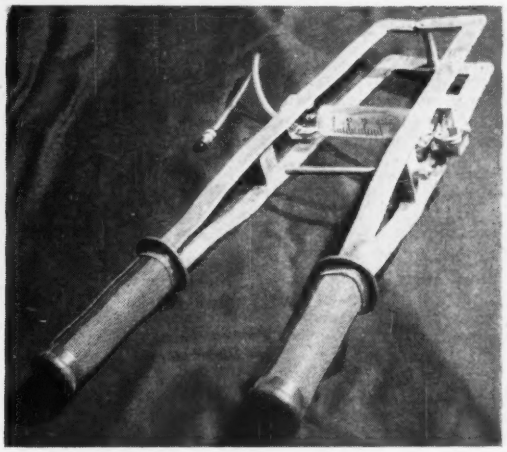

FIGURE III.
Hand injector apparatus with syringe in position.

twelfth rib, a hand's breadth from the midline. An eight-inch sixteen-gauge needle is used (Evans, 1957, recommends a needle no larger than gauge 18, but we have not encountered any trouble with gauge 16), and the point is directed anteriorly, medially and slightly towards the patient's head. The vertebral body is followed round by gently withdrawing and reinserting the needle until it just clears bone. A slight thrust is then usually successful in entering the aorta. A syringe containing 25 ml. of 70% "Urografin" solution is immediately connected to the needle and the injection is made as rapidly as possible, the exposure being made at the end of the injection. The needle is then immediately withdrawn. Many people advise a scout film with a test dose of 5 ml. of contrast medium to ascertain the position of the needle, in case

the needle point is in a renal or mesenteric artery, when severe complications may ensue from the full injection. This risk, now much less with safer contrast media, must be balanced against that from leaving the needle in the aorta for five to 10 minutes whilst the film is processed. There seems to be little doubt that the longer it is left in, the greater is the risk of hæmorrhage from the puncture site. Pyelogram films are taken at 10 and 20 minutes. If it is not desired to visualize the renal arteries, the needle entry is made about 1·5 in. beneath the left twelfth rib and directed medially without any angulation to the patient's head. One film is adequate for demonstrating any abnormality in the aorta or iliac arteries; but for renal angiography, serial films must be taken with some mechnical or electrical film changer. Those that are at present commercially available are expensive, and

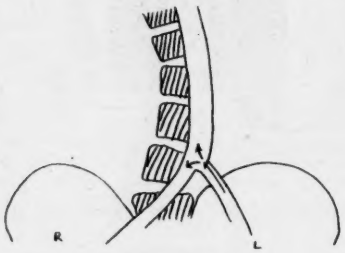

FIGURE IV.
Showing how the angle of origin of the common iliac arteries to the abdominal aorta varies with lumbar scoliosis.

some are unreliable. However, there is promise of the local development of a satisfactory, inexpensive electrically operated machine in the near future.

Percutaneous Transfemoral Aortography.

Percutaneous transfemoral aortography is certainly the best method available, the advantages being as follows: (i) Damage to the aorta and to abdominal and spinal structures by a needle is obviated. (ii) Hæmatoma formation can be adequately controlled. (iii) Speed is not a factor. The catheter has been left in for 50 minutes without untoward effect. (iv) The tip of the catheter can be accurately positioned at any level and scout films taken, thus permitting selective arteriography at different levels. Thoracic aortography and carotid angiography can be done in this way (Per Odman, 1956). However, this method cannot be used if there is a block in the abdominal aorta or in the external iliac artery. It can be difficult in patients with arteriosclerotic or tortuous vessels.

Preparation and Position of the Patient.

Sedation is advisable, and the patient remains in hospital for the night of the examination. A test dose of 1 ml. of a 70% "Urografin" solution is given intravenously. The operator stands at the foot end of the patient and is protected throughout the exposures by means of a lead-rubber screen lowered from the ceiling.

Procedure.

Local anæsthesia is induced over the most palpable portion of the femoral artery. The technique is that described by Seldinger, and consists of passing a "Polythene" catheter percutaneously into a femoral artery and up the aorta. The catheters we have used are of two sizes, P.E. 160 (the smaller diameter) and P.E. 205. There are needles and wires of corresponding size.

For examination of the aorta and of the iliac and leg vessels the P.E. 160 catheter is sufficient. The Seldinger needle has a slight shoulder near its tip, and those people inexperienced in arterial puncture may encounter slight difficulty in inserting the needle through the arterial wall. In its place, an ordinary sixteen-gauge needle can be used, and we find that this permits the passage of the P.E. 160 Seldinger wire, which is 80 cm. long. A piece of plastic tubing P.E. 160 (animal tested) 50 cm. length has been prepared, one end being narrowed slightly by stretch drawing and cutting it so that it fits the wire closely. This step is most important, otherwise the catheter will not easily negotiate the arterial wall. One or two holes are cut on the side of the catheter about 0·5 in. from its tip.

A small skin stab is made and the needle is inserted. As soon as the artery has been entered, the flexible end of the Seldinger wire is passed through the needle and beyond its tip for a distance of about 2 in. The needle is then withdrawn, care being taken to see that the wire does not come out, and gentle pressure is exerted over the puncture site. The catheter, narrowed end first, is

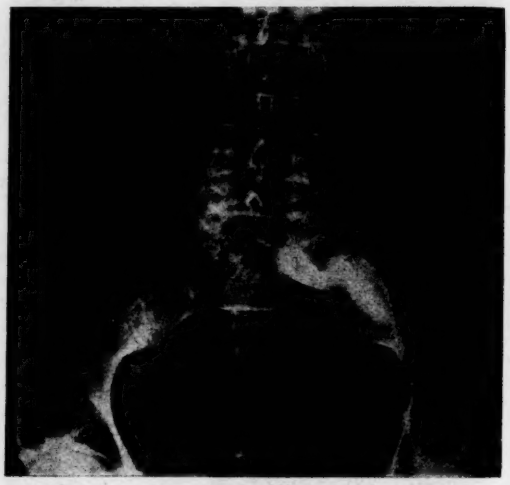

FIGURE V.
Tortuous common iliac artery.

threaded on to the wire until the skin is reached. The catheter and wire are firmly gripped and thrust as one unit into the artery. It is then a simple matter to continue to insert the catheter and wire to the level desired. The wire is withdrawn, 5 ml. of "Urografin" solution are injected slowly and a film is taken to see the exact position of its tip. Once the wire has been removed, a sixteen-gauge Luer-Lok needle is fitted onto the end of the catheter, so that nothing less than sixteen-gauge bore is maintained throughout. It is necessary to dilate the end of the catheter slightly for this. Alternatively, the P.E. 160 connector can be fitted on the end. A thin coating of paraffin to lubricate the syringe is a help. Better contrast is obtained by occluding each femoral artery by means of a sphygmomanometer cuff during the injection.

By attention to these details, simple manual pressure injection gives sufficient contrast for visualization of the aorta and its branches. Twenty millilitres of 70% "Urografin" solution are injected.

Once the catheter has been inserted, no pressure is needed over the puncture site. Flow is maintained with isotonic saline whilst the films are processed. We have not found it necessary to use anticoagulants. As soon as the catheter has been removed, firm pressure must be exerted on the artery and maintained for at least 20 minutes, without completely occluding the vessel. For bilateral renal arteriography and thoracic aortography higher contrast is usually necessary, and this can still be obtained by manual pressure if the P.E. 205 Seldinger needle, wire and catheter are used. The corresponding Seldinger 205 adapter is fitted to the end of the catheter, which is connected to the syringe. To display the renal vessels the tip of the catheter is advanced to the body of

the first lumbar vertebra. Some sort of pressure device for injecting the contrast is a decided advantage, and it is a simple matter to make an effective one such as is shown in Figure III. We are indebted to Mr. J. Davis, of Sydney Hospital, for this design. Twenty millilitres of a 70% solution of "Urografin" are injected. Radio-opaque

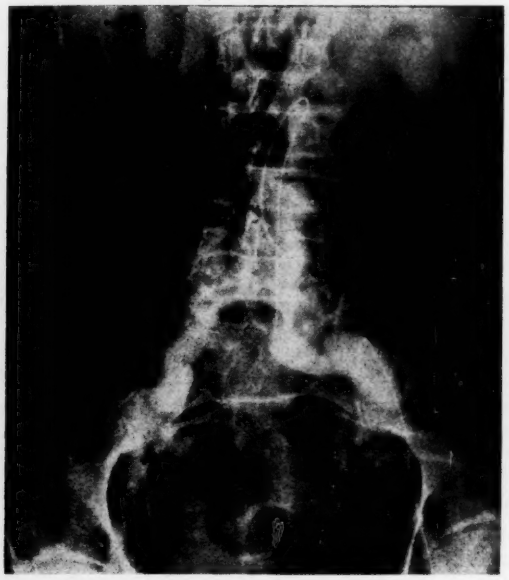

FIGURE VI.
Catheter looped in the abdominal aorta.

catheters of various sizes are now readily available, but these have a relatively thick wall and narrow lumen. They are used with the Seldinger introducer and wire, and a mechanical injector must be used to produce sufficient contrast. They are useful when carotid or sub-

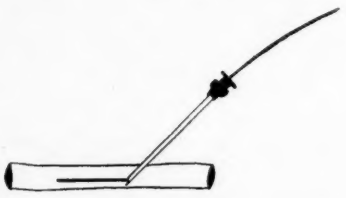

FIGURE VII.
Guide wire forming an angle with the needle.

clavian arteriography is being performed by the transfemoral approach, the position of the tube being ascertained fluoroscopically.

The brachial artery can similarly be catheterized. In view of pain experienced, this is best done under general anæsthesia. With the use of the P.E. 160 catheter and a mechanical injector, the vertebral, carotid and subclavian arteries are well demonstrated.

Difficulties Encountered.

In our small experience of 130 arteriograms there has been no morbidity due to anaphylactic reaction, arterial thrombosis, hæmorrhage or other untoward effects. If a plain film of the abdomen is taken before the examination, the direction of lumbar scoliosis can be seen. It is easier to enter the aorta if the femoral artery on the side of the concavity of the scoliosis is catheterized (Figure IV).

Arteriosclerotic patients can present difficulties. The external iliac artery may be so deformed that it is virtually impossible to gain entrance to the aorta (Figure V).

In one case in which the lower end of the aorta was dilated, the catheter became curled up and the wire had to be reinserted (Figure VI).

In another case the catheter could not be passed higher than the origin of the common iliac artery on each side; but as the femoral pulses were very good, it was thought that this was due simply to an anatomical bend at these levels. So it was decided at the second catheterization to leave the point at the origin of the common iliac, compress both femoral arteries and inject as rapidly as possible with the mechanical injector. This succeeded in filling the aorta up to the first lumbar vertebra with adequate contrast.

Tiny holes often occur in the catheter, and scrupulous examination is necessary to see that it is free of these. For sterilization the catheter is boiled with the wire threaded through it.

If difficulty is experienced in passing the wire beyond the needle tip, great care must be used in withdrawing the wire, because in so doing a wire may be cut off inside the artery by the needle point owing to the angulation of entry (Figure VII). Selective angiography — that is, insertion of the catheter tip into a renal or other branch of the aorta — is a step further than what has just been described. This, of course, requires fluoroscopic screening and brings in problems of equipment. Unless there is available a film changer through which screening can be performed, it means catheterizing the patient on one table and moving him to another for the exposures.

Summary.

The following three methods of arteriography found to be effective and satisfactory are described: (i) direct percutaneous femoral arteriography; (ii) direct translumbar aortography; (iii) percutaneous transfemoral aortography.

As a rule these examinations are adequately performed under local anæsthesia. The patient is admitted to hospital on the night of the examination only if contrast medium has been injected into the aorta. Various difficulties encountered are listed.

Acknowledgements.

We are grateful to Dr. Wallace Freeborn, General Medical Superintendent of the Royal North Shore Hospital, for permission to publish this article; to Miss L. Matheson, Supervisor of Radiography, for her able assistance and advice; and to Miss M. Simpson for reproduction of diagrams and radiographs.

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URINARY SPECIFIC GRAVITY AS A MEASURE OF RENAL FUNCTION.

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THE principal function of the kidney is to maintain constant the volume and composition of the bodily fluids by excreting urine. This is accomplished by the concerted effort of innumerable units, or nephrons, engaged in a complicated series of processes involving filtration of plasma and tubular reabsorption and adjustment, which are partly under the control of remote endocrine glands.

Renal failure means either that materials which should have been retained are excreted in excess or, more commonly, that substances are retained which should have been excreted. A full assessment of renal function, therefore, would have many facets, but essentially it would involve an examination of urine, an examination of plasma, and measurement of the facility with which the kidney clears substances from the plasma into the urine.

Some of the more elegant clearance techniques are generally accepted as giving the best over-all assessment of renal function; but they are mainly research procedures and are not usually available in clinical practice. Most commonly, it would seem, clinicians turn to the laboratory for measurements of the blood urea content or the urea clearance in their attempts to assess renal function. The merits of a simple assessment of the concentrating ability of the kidney, as indicated by the urinary specific gravity after a "water concentration test" are often recited, but the test receives more lip-service than confident usage. At the most, it is sometimes used to provide a rough guide to normality as opposed to sub-normality, the dividing line being a specific gravity of 1·022 or thereabouts after deprivation of water for 24 hours (De Wardener, 1958). The results of the study being reported here raise the status of the specific gravity test by showing that it provides a measure of renal function which is as accurate as that given by more complicated laboratory procedures.

Methods.

Specific Gravity.

The concentrating power of the kidney was tested by depriving the patient of all fluid after 4 p.m. one day and measuring the specific gravity of the urine passed after 18 hours of deprivation. Measurements were made with an ordinary clinical urinometer checked for accuracy. No corrections were made for temperature or proteinuria.

Subjects.

Observations were made on 71 patients of both sexes in hospital. Most of them had been admitted for investigation of renal function or hypertensive disease and were eating a normal diet. None had more than light proteinuria.

Other Tests.

The blood urea nitrogen content, the plasma creatinine content, the urea clearance and the endogenous creatinine clearance were measured on other days by methods described elsewhere (Edwards and Whyte, 1959). Creatinine clearance has been accepted as a measure of glomerular filtration rate. Not all tests were made on all subjects.

Results.

The relative values of urinary specific gravity after water deprivation, of urea clearance and of the blood levels of urea and creatinine as indicators of renal function—the glomerular filtration rate (G.F.R.) as measured by creatinine clearance being used as the yardstick—are shown in Figures I to V and in Table I.

The most precise indicator appeared to be the plasma creatinine level. The reciprocal of the creatinine concentration gave a straight line relationship with G.F.R. (Figure I), which was expressed by the equation:

$$\text{G.F.R. (ml./min.)} = \frac{68}{\text{creatinine concentration}} + 14$$

The validity of the relationship is indicated by the high degree of correlation ($r = +0{\cdot}81$). The extent to which the points scatter about the line is indicated by the standard deviation, which was 22 ml. per minute. Thus, the true G.F.R. of any one subject would be expected to be within ± 44 ml. per minute of the estimate derived by using the formula based on the plasma creatinine concentration.

The specific gravity of urine collected after 18 hours of water deprivation was almost as good as plasma creatinine concentration as a measure of G.F.R. (Figure II and Table I). The formula relating the two allowed the true G.F.R. to be predicted to within ± 48 ml. per minute; the correlation coefficient was $+0{\cdot}79$.

TABLE I.

Formulæ for the Prediction of Glomerular Filtration Rate (Millilitres per Minute) Together with Estimates of their Accuracy.

Number of Observations.	Basis of Prediction.	Formula.	Standard Deviation from Regression.	Correlation Coefficient.
77	Plasma creatinine content (milligrammes per 100 ml.)	$\frac{68}{\text{P.C.}} + 14$	22	+0·81
50	Specific gravity (last two digits only)	5·9 S.G. −33	24	+0·79
48	Urea clearance (percentage of normal)	0·62 U.C. +25	19	+0·76
67	Blood urea nitrogen content (milligrammes per 100 ml.)	$\frac{820}{\text{B.U.N.}} + 20$	28	+0·67

Urea clearance was equally satisfactory ($r = +0{\cdot}76$), the error being ± 38 ml. per minute (Figure III and Table I). Clearances were at that time being combined with a test of urea concentration, and many, consequently, were "standard" and not "maximal". The blood urea nitrogen level was less satisfactory, prediction of G.F.R.

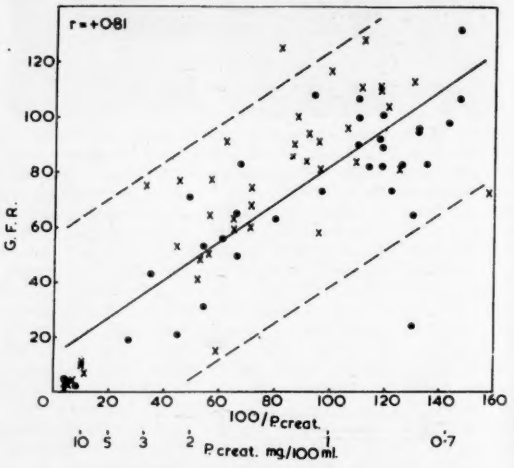

FIGURE I.

The relation of plasma creatinine level, expressed as a reciprocal (1/mg. per 100 ml.), to the glomerular filtration rate (millilitres per minute).

being subject to an error of ± 56 ml. per minute. Once again, there was a straight-line relationship between G.F.R. and the reciprocal of the blood urea nitrogen level (Figure IV); using the blood urea nitrogen level directly gave the curved relation shown in Figure V.

There were no significant differences between the correlation coefficients relating G.F.R. to plasma creatinine level, maximal specific gravity and urea clearance.

Discussion.

The essential significance of this study lies in the finding that renal function can be measured as accurately by a specific gravity test—involving nothing more than the patient's cooperation and a clinical urinometer—as by some of the more complicated tests which involve biochemical analyses. If, after the patient has been deprived

of water for 18 hours, the urinary specific gravity exceeds 1·026, then we can be reasonably certain that the glomerular filtration rate is normal; if it exceeds 1·018, then renal function is more likely to be normal than sub-

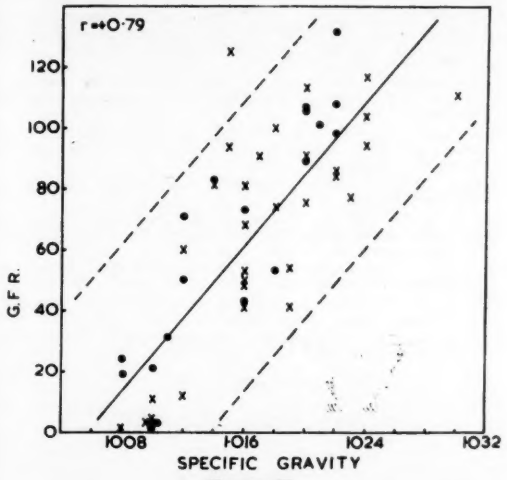

FIGURE II.

The relation of urinary specific gravity after water deprivation for 18 hours to the glomerular filtration rate.

normal; and it is only when the specific gravity fails to exceed 1·010 that we can be sure of renal impairment. This method of assessment is far from precise, but is probably adequate for most clinical purposes. Certainly, if urine can be concentrated to give a specific gravity

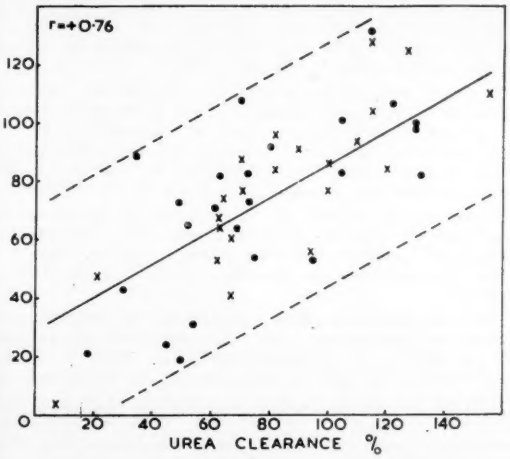

FIGURE III.

The relation of urea clearance to G.F.R.

above 1·018, then it is unlikely that any renal impairment that may be present is of sufficient degree to be causing symptoms (Miles *et alii*, 1954).

The normal range of glomerular filtration rates in hospital subjects is 76 to 140 ml. per minute (Edwards and Whyte, 1959). The present study shows that an estimate of a subject's G.F.R. can be derived from the urinary specific gravity achieved after water deprivation by using the formula G.F.R. = 5·9 × S.G. − 33, where S.G. refers to the last two digits in the figure for specific gravity. Put more simply, and scarcely less accurately, this becomes: G.F.R. = 6 × (S.G. − 5). Thus, the estimated G.F.R. of a subject whose urinary specific gravity in this test is 1·015, is 6 × (15 − 5), that is, 60 ml. per minute. The expected range of scatter, however, is such that the true G.F.R. may lie anywhere within ± 50 of an estimate

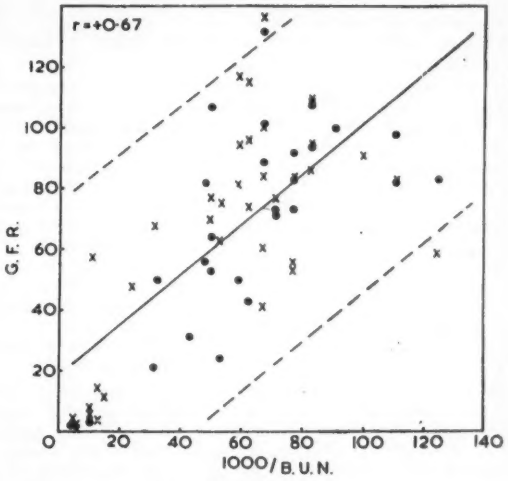

FIGURE IV.

The straight-line relationship between G.F.R. and the reciprocal of the blood urea nitrogen concentration (milligrammes per 100 ml.).

derived in this way—that is, between 10 and 110 ml. per minute in this instance. This lack of precision is rather disappointing. The specific gravity test is obviously a blunt instrument for measuring glomerular filtration rate.

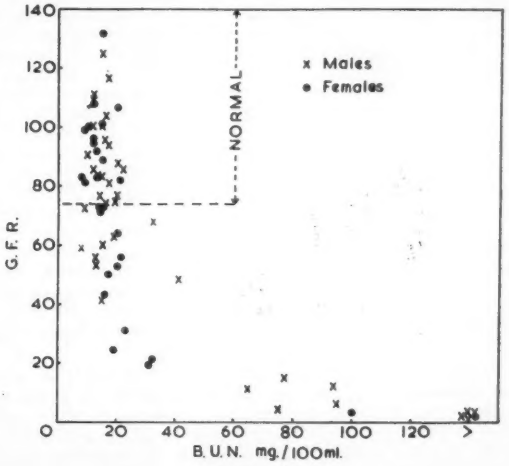

FIGURE V.

The curved relationship between G.F.R. and blood urea nitrogen concentration.

However, as is shown in the present study, it is superior to the blood urea concentration and no less precise than the urea clearance or the plasma creatinine concentration. The last-mentioned, particularly, provides one of the best measures of renal function, short of the sophisticated clearance techniques which are not available for routine use (Edwards and Whyte, 1959). Thus, of all the renal function tests which are in common use, none is convincingly superior to the simple specific gravity test.

That there should be such a good relationship between glomerular function and concentrating ability of the

kidney, which is a function of the distal tubule, lends some support to the belief that glomeruli and tubules are generally lost in parallel in renal disease (Michie and Michie, 1957). Even if the disease affects only glomeruli, then the excretory load of water and solutes is borne by the tubules of the remaining intact nephrons, and under these circumstances of osmotic diuresis their concentrating ability is impaired (Platt, 1952; Bricker *et alii*, 1959).

It is important to remember that the concentrating power of the kidney is what this test aims to measure, but that specific gravity is a rather poor and variable measure of concentration. Concentration refers to the number of particles or molecules of substances per unit volume of water—that is, osmolarity—whereas specific gravity is a measure of the weight of the solution relative to water, and is therefore influenced by the weight of the constituent molecules as well as by their number. With like osmolarities the specific gravity of different specimens of urine may vary as widely as 1·026 to 1·036 or 1·017 to 1·022. Thus, for any given concentration the specific gravity is less when there is a predominance of urea or alkaline substances, and greater when acid products, protein or glucose are present (Isaacson, 1959).

Obviously it would be preferable to measure osmolarity as, for example, by the method of freezing point depression, rather than specific gravity, and on this basis a more accurate prediction of renal function would be expected. But this gets away from the simplicity of the test. In addition, it would be best to ensure that the kidney is concentrating maximally. This means continuing the deprivation of water till the urinary concentration becomes constant, and this may not be achieved for 36 hours or longer (Miles *et alii*, 1954). The test then becomes an ordeal. Injections of pitressin have been used in an attempt to find a simpler method, but the urinary concentration induced is less than the maximum attainable by water deprivation (Jones and De Wardener, 1956).

The accuracy and usefulness of the test can be somewhat increased by observing simple precautions, without recourse to complicated methods for measuring osmolarity and rigorous conditions for ensuring maximal concentration. The urinometer should be checked for accuracy in water, detergents should be avoided in cleaning containers, and due allowances should be made for temperature and proteinuria. An addition of 0·001 should be made to the reading for every 3° C. or 5·5° F. by which the temperature of the urine exceeds the standard temperature, usually 15·6° C. or 60° F., marked on the hygrometer. The reading should be reduced by 0·001 for every 5 grammes of protein per litre, which is moderately heavy proteinuria. Apart from these routine precautions, the test should not be performed on patients with diabetes insipidus, severe renal insufficientcy or severe hypertensive disease under treatment with hypotensive agents. Despite all care, an emotional reaction may cause diuresis and a false impression of impaired concentrating ability.

Against all these possibilities and difficulties stands the observed fact that the specific gravity of urine after deprivation of water for 18 hours gives as good an indication of renal function as any other readily available test. It is also the simplest and cheapest. It requires no venepunctures, avoids the difficulties of complete collection of urine over timed periods and can be carried out without the services of a laboratory.

Summary.

The specific gravity of urine after water deprivation for 18 hours gave as good an indication ($r = 0·79$) of renal function—taken as the glomerular filtration rate (G.F.R.) measured by endogenous creatinine clearance—as did the plasma creatinine level ($r = 0·81$), the urea clearance ($r = 0·76$) and the blood urea nitrogen concentration ($r = 0·67$).

G.F.R. could be predicted from the last two digits of the specific gravity reading, with a standard deviation of ± 24 ml. per minute, by the equation: G.F.R. $= 5·9 \times$ S.G. $- 33$.

The simplicity, usefulness and interpretation of the test are discussed.

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IT HAPPENED ONE NIGHT.

By ION MORRISON,
Brisbane.

With a Note on the Meteorological Data by A. T. BATH,
Brisbane.

Clinical Observations (I.M.).

FOR the past eleven years, an attempt has been made to correlate the factors that have occurred on certain occasions throughout the course of the year, causing patients with asthma suddenly to "trigger off" together at a particular hour on a particular night. The fact that this phenomenon occurs is only too well realized by many general practitioners and casualty residents in all parts of the eastern coast of the continent.

My own interest went back to 1946, when I was practising in a Sydney suburb. In 1948 I managed to secure a German device which recorded temperature, humidity and barometric pressure. Since then, an attempt has been made to find a common factor, both in New South Wales and (for the past five and a half years) in Brisbane.

Unknown to me, Dr. E. H. Derrick, of the Queensland Institute of Medical Research, has been following the same line (personal communication). On his advice this paper is published to stimulate further interest in the subject.

The meteorological data, supplied by the Commonwealth Bureau of Meteorology, cover the actual conditions present on the night in question (April 20, 1959). The same conditions were also in evidence on the following night.

During the night of April 20, between 11.20 p.m. and 12 midnight (the time is specific), literally hundreds of asthmatics were reported to have awakened with violent asthma within a radius of 40 miles of Brisbane—from Caboolture (30 miles north of Brisbane) to Boonah (30 miles west) to Scarborough (15 miles east) and to Tamborine Mountains (20 miles south).

I have myself been visited by, or I have visited, 92 of these patients. Two patients stated that their chests started to tighten at 8 p.m.; 76 stated specifically that they awoke with asthma between 11.20 and 11.45 p.m., and another nine from 11.45 p.m. to 3 a.m. One of these last-mentioned patients awoke with a violent sensation of choking, dreaming that someone had a hand over his mouth, stopping his breathing. Five other patients awoke "choking with asthma" on the morning of April 21.

I checked at a ward in the South Brisbane General Hospital, and found that all three asthmatics in the ward

had awakened and been given adrenaline at exactly 11.45 p.m. A point of interest is that 2 a.m. to 3 a.m. is the usual time for the nocturnal attack of an asthmatic.

Further, a number of general practitioners confirmed that this night was noteworthy, as they were called on several occasions to relieve acute attacks of asthma. During the night there was no variation from the normal change after the evening meal. The "Enseal" is a tablet that dissolves after six hours, releasing its contents. One or two tablets are taken at tea-time. Of these 21, 15 had a good night's sleep, and awoke free of asthma; while six awoke with wheezing during the night and took half a tablet of isoprenaline, which gave them immediate relief and enabled them to go back to sleep.

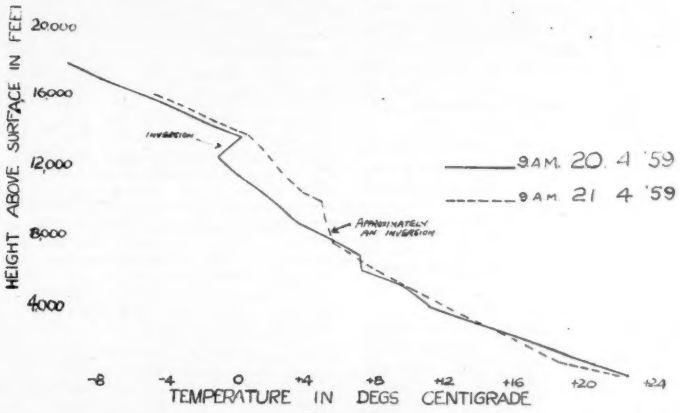

FIGURE I.

Showing temperature in relation to altitude over Brisbane on the days of April 20 and 21, 1959.

in temperature, humidity or barometric pressure in Brisbane or its environs. This is the most important factor, as previously, on nights when asthmatics "triggered", there had always been a marked change in one of these three factors. I had previously noted that if a seismic tremor occurred which was recorded on the seismograph at the Department of Geology at the University of Queensland, and it was associated with a sudden fall of barometric pressure at the same time, there seemed to be a great increase of asthma; these two completely natural phenomena appeared to precipitate a third—namely, asthma. However, on the night of April 20, 1959, there was no alteration in the microseismic pattern at all.

I was also able to interview 21 patients who at that time were taking suppressive therapy, consisting of "Amesec" capsules three times daily and "Amesec Enseals"

Meteorological Data (A.T.B.).

At the Brisbane Bureau of Meteorology, the following elements are measured every hour at the earth's surface: temperature, pressure and wind. From dry and wet bulb thermometer readings, relative humidity is calculated.

During the period from 9 a.m. on April 20 to 9 a.m. on April 22, 1959, there was no appreciable daily variation in the values of these elements. There was, however, a considerable change during this period in the variation of temperature with height above the earth's surface.

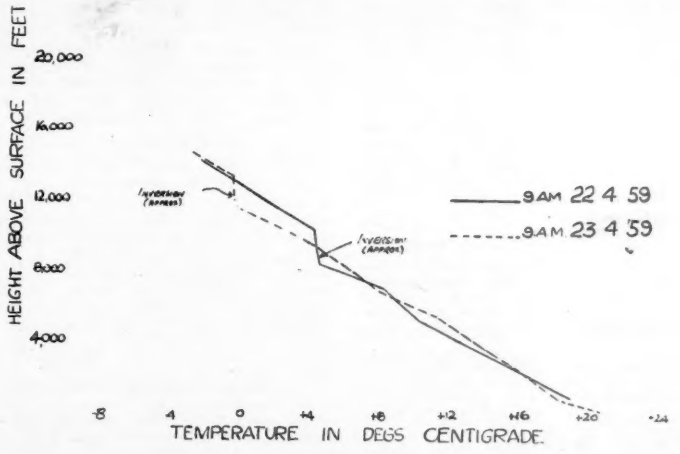

FIGURE II.

Showing temperature in relation to altitude over Brisbane on the days of April 22 and 23, 1959.

As a rule temperature decreases with height; but occasionally one finds layers in the atmosphere where the temperature is increasing with height. Such a state is called a temperature inversion, which is the important aspect here. It is a physical fact that when a temperature

inversion exists in any layer in the atmosphere, air beneath the inversion cannot rise through the inversion and is trapped beneath it. If the inversion does not exist, air can rise to great heights from the earth's surface and remove particles of dust and other matter which may be polluting the amosphere near the earth's surface. Figure I shows that at 9 a.m. on April 20, 1959, there was a fairly steady decrease of temperature with height up to 12,500 feet. This means that air could rise fairly readily up to this level at that time. However, overnight on April 20, there was a change in this structure, which is shown by the temperature trace for 9 a.m. on April 21 (see Figure I). It can be seen that the height of the inversion had dropped to 7600 feet. Thus air beneath was not free to rise to nearly the same extent as was the case on the previous day.

The trace for 9 a.m. on April 22 (see Figure II) shows that conditions are still much the same as on the previous morning, the inversion being at 8300 feet and representative of conditions of the night of April 21.

Quite a marked change took place in the next 24 hours, for it can be seen from the trace for 9 a.m. on April 22 that the inversion had lifted to a height of 11,500 feet.

Comment (I.M.).

Roberts and Batey (1957) of Sheffield showed a direct association between (i) the sulphur-dioxide content of the atmosphere, (ii) the number of days on which temperature inversion occurred and (iii) the number of deaths recorded as being due to bronchitis. The temperature inversion causes an increase in sulphur-dioxide concentration at ground level, because there is less dispersion of the gases.

Conclusion.

It appears that this occurrence of a temperature inversion is predictable. If we are thus forewarned and forearmed, is it not possible that we can give patients with asthma ephedrine or long-acting ephedrine-like substances to get them through these nights, thereby relieving them of a distressing complaint, and their doctors of much loss of sleep? On the night in question, the 21 patients having this therapy seem to confirm this hypothesis.

On the night of April 21 the city of Brisbane was under the same weather conditions, and it is interesting to note that the patients whose asthma was already triggered during the first night continued with their attack.

Summary.

On the night of April 20, 1959, 92 patients in the Brisbane area developed asthma. A temperature inversion occurred on this night and on the following night, without any other significant alteration of other meteorological factors.

Acknowledgements.

My thanks to Dr. E. H. Derrick for his helpful assistance in my work and to Dr. J. P. Webb, of the Geology Department of the University of Queensland, who has studied the microseismic charts.

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Reports of Cases.

TINEA CONTRACTED FROM KANGAROOS.

By G. F. DONALD, D.D.M.,

From the Skin Clinic of the Queen Elizabeth Hospital, and the Institute of Medical and Veterinary Science, Adelaide.

DERMATOLOGISTS are aware that kangaroos infected with tinea can cause epidemics of tinea among humans, but no record of this fact is to be found in the medical or veterinary literature. Seddon reviewed the veterinary mycology of Australia in 1953, but did not list the kangaroo as an animal known to be affected by tinea. Durie reviewed the medical and veterinary mycology of Australia in 1958, but was not able to extend Seddon's list of animals known to be subject to superficial fungous infections.

During the years 1955 to 1959 the writer has treated eight persons who have contracted tinea from pet kangaroos. In all cases the lesions have been markedly inflamed and new lesions have continued to appear for three to four weeks. This accords with the general rule that tinea infections in humans tend to produce a marked host response if the infection has been recently acquired from an animal. The eight white persons who have been studied were from four family groups, as follows.

Group I.

A female patient, aged 30 years, was examined in June, 1957. She stated that a pet kangaroo brought from Woomera (325 miles from Adelaide) had caused multiple areas of ringworm on her brother-in-law's skin one month previously. The kangaroo was destroyed, but within two weeks both the patient and her husband developed inflamed irritable lesions on their skin. When examined, the patient showed several vividly erythematous discoid areas on her left cheek, her neck and both forearms. Abundant mycelium was seen on direct microscopic examination, and cultures made on Sabouraud's medium grew *Trichophyton mentagrophytes*.

The patient's husband had contracted a solitary lesion 2 cm. in diameter on the right side of his nose and adjacent cheek. The area was red and slightly swollen and showed a few miliary follicular pustules. It was not possible to see or grow the fungus responsible for this plaque.

Group II.

In July, 1957, a male patient, aged 28 years, his sister and brother-in-law came to Adelaide from Woomera to seek advice for an erythemato-vesicular eruption contracted from an infected friend who had a pet kangaroo. The patient had acutely inflamed tinea barbæ, and the right upper lip was swollen by an ill-defined erythematous boggy mass, the surface of which was dull red and crusted. A ring of white scale could be seen about the orifice of some hair follicles while other hairs emerged through small follicular pustules. On direct microscopic examination, branching mycelium could be seen loosely entwined about the intrafollicular position of the involved hairs; all culture tubes were overgrown by staphylococci, and no fungus was isolated.

The patient's sister, aged 24 years, was continuing to develop discoid erythemato-vesicular lesions on her face and trunk. Many lesions were becoming pustular and were distinctly infiltrated. Mycelium was demonstrated microscopically and *T. mentagrophytes* was grown.

This woman's husband had also begun to develop widespread lesions of a similar type.

Group III.

In 1955, a husband and wife complained of acutely inflamed ringworm, which developed within 10 days of bringing a young kangaroo home from the country. One child and several neighbours also contracted the disease, and new lesions continued to appear for almost four weeks, though the kangaroo was destroyed. The causative fungus was shown to be *T. mentagrophytes*.

Group IV.

A female child, aged four years, was examined in 1959, because of an inflamed plaque on her face, 5 cm. in diameter. The area was vividly erythematous, and the border was œdematous and vesicular. Six smaller lesions had also appeared on other parts of her trunk and limbs during the preceding three weeks. The history in this case was that a neighbour's young kangaroo had been responsible for at least 10 human infections, and in this instance too, *T. mentagrophytes* was grown on culture.

Discussion.

None of the kangaroos responsible have been available for examination, but in view of the similarity of the clinical and epidemiological patterns in these four groups it seems reasonable to assume that an infected pet kangaroo was the cause of each epidemic. As it is not uncommon for tinea to be contracted from domestic animals, the absence of a systematic investigation of the

mycoses of animals in Australia is to be deplored. A survey has begun recently at the Institute of Medical and Veterinary Science, Adelaide, to determine the types of fungi which affect domestic animals in South Australia. It is hoped that this study can be extended to cover as wide a range of fauna as is practicable.

Summary.

The transmission of tinea from kangaroos to humans is recorded for the first time, and eight such cases have been studied. The lack of a comprehensive survey of the mycotic infections of animals in Australia is noted.

Addendum.

After this report was accepted for publication the first report of ringworm infection of kangaroos was published. In the course of a survey of animal ringworm at the Communicable Disease Center, Georgia, *T. mentagrophytes* was isolated from a kangaroo (Georg, 1959).

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Reviews.

The Year Book of Orthopedics and Traumatic Surgery (1958-1959 Year Book Series). Edited by Edward L. Compere, M.D., F.A.C.S., F.I.C.S.; with a section on "Plastic Surgery", edited by Neal Owens, M.D., F.A.C.S., F.I.C.S.; 1959. Chicago: The Year Book Publishers. Sydney: W. Ramsay (Surgical) Limited. 7¾" × 5", pp. 448, with 227 illustrations. Price: £4 2s. 6d.

IN the introduction to the present volume, E. L. Compere announces his resignation from the editorship of the "Year Book of Orthopædics and Traumatic Surgery", for which he has been responsible for the past 12 years, and takes the opportunity to make a few comments on the "alarming increase in the incidence of infections of the wounds following elective operations" and the necessity of excluding carriers of virulent organisms from the operating theatre. The chapter headings of the main part of the book are almost identical with those of the preceding year and cover the full range of orthopædic and traumatic surgery. Two abstracts in the "Miscellaneous" group at the end may be noted. One, entitled "The Speeding Ambulance", presents an analysis of 2500 consecutive ambulance runs; the conclusion that speed is generally unnecessary is strongly supported by an editorial comment, which includes the words: "The speeding ambulance causes many injuries and deaths. Rarely does it ever save a life." The other is a report of a discussion on the management of mass casualty situations in time of war, published in the *Proceedings of the Royal Society of Medicine*; it receives high editorial commendation. The section on plastic surgery, edited by Neal Owens, which was first introduced in the 1957-58 volume, is divided into chapters on congenital anomalies, burns, reconstruction, fractures, neoplasms, cosmetic surgery and tissue transplantation.

Year Book of Ophthalmology (1958-1959 Year Book Series). Edited by Derrick Vail, B.A., M.D., D.Oph. (Oxon.), F.A.C.S., F.R.C.S. (Hon.); 1959. Chicago: The Year Book Publishers. Sydney: W. Ramsay (Surgical) Limited. 7¾" × 5", pp. 408, with 78 illustrations. Price: £4 2s. 6d.

This is the second year in which the "Year Book of Ophthalmology" has appeared as an independent volume, and the arrangement of the contents follows closely that of the first volume. It is introduced by a special article, contributed by Bernard Becker, on recent advances in the diagnosis and medical therapy of chronic simple glaucoma. In this he summarizes selected topics of current clinical interest; under the general headings of diagnosis he discusses tonometry, tonography, hyposecretion and hypersecretion; in his remarks on medical therapy he states that, in recent years, the general trend has continued towards the medical management of chronic simple glaucoma, unless surgery becomes mandatory because of progressive field loss, and discusses the use of miotics, carbonic anhydrase inhibitors and epinephrine (adrenaline). The main subject matter of the book consists of selected abstracts, with editorial comments where appropriate, arranged in five chapters classified according to the anatomical division of the eye ("The Orbit and Adnexa", "The Vitreous and Retina", etc.), one on refraction and motility, one on neurology and visual fields, one on glaucoma, and finally three chapters on therapy, surgery and miscellaneous topics respectively. This presentation of abstracts of most of the more important papers which were published in the field of ophthalmology during the year under review lives up to the usual high standard of the Year Book series.

The Practical Evaluation of Surgical Heart Disease (The Glover Clinic). Written and compiled by Robert G. Trout, M.D., edited by Robert P. Grover, M.D.; 1959. New York, Toronto and London: McGraw-Hill Book Company, Inc. 11" × 8½", pp. 143, with 44 illustrations. Price not stated.

THIS is a simple, clear and concise presentation of the clinical picture and diagnosis of those cardiac disorders which are currently treatable by surgical means. The material in this book was first presented as an American Medical Association convention exhibit, and was awarded the Billings Gold Medal.

It is well furnished with diagrams, X-ray pictures and electrocardiograms illustrating all the conditions described. In addition there is, in an insert on the back cover, a small 45 r.p.m. recording of the heart sounds and murmurs found in the diseases described. To get the best from the record a "hi-fi" pickup is needed.

The text is in précis form, and contains as much information as most people require. Few cardiologists would disagree with the opinions expressed. Indeed, it is quite apparent that in the field that is covered world opinion has become pretty well crystallized. The present diagnostic techniques of cardiac catheterization, left heart puncture and angiocardiography are all described, and criteria for evaluation of the results are presented. Finally, a good bibliography and a good index are provided.

This is a simple but adequate presentation of the field of cardiac surgery, and should commend itself to students, general practitioners and consultants who are not trained cardiologists.

The Mouth: Its Clinical Appraisal. By A. B. Riffle, D.D.S.; 1959. Philadelphia and Montreal: J. B. Lippincott Company. Sydney: Angus & Robertson, Limited. 7¾" × 4¾", pp. 128, with 22 illustrations. Price: 38s. 6d.

THIS pocket book on "The Mouth: Its Clinical Appraisal", by a former chief of the dental service at the Rochester General Hospital in Minnesota, sets out "a practical yet comprehensive procedure" for examination of the mouth (as distinct from the teeth). It was devised for the tuition of dental students, and it is accompanied here by "brief practical interpretations and background explanations" of the conditions most likely to be seen. There is homely wisdom in the pages, but nothing which is recondite or invokes minute physiological or pathological knowledge. The section on foul breath begins as follows: "It seems generally to be held that most bad breath is of oral origin. The author is not so sure." The ensuing discussion is on this plane. In the final chapter, headed "Potentially Grave Criteria", great compression is achieved, so that the very wide field where general pathology and oral pathology overlap is seen as through the wide end of a telescope.

Praktische Blutlehre: Ein Ausbildungsbuch für prinzipelle Blutbildverwertung in der Praxis (Hämmogram-Methode). By V. Schilling, 1959. Jena: Veb Gustav Fischer Verlag. Sydney: Angus & Robertson, Limited. 8" × 5¾", pp. 284, with illustrations. Price not stated.

THIS little manual, first published in 1922, now appears in its sixteenth edition. The author, who is *"Emeritus Direktor der medizinischen Universitätsklinik"*, Rostock, Germany, has been very well known to all hæmatologists for many years, and his method of interpreting a leucocyte count—the Schilling count—is included in all standard textbooks. Schilling's *"Hæmogram-method"* is essentially a screening test, consisting in a careful examination of a well-spread film, with a differential leucocyte count including a description of the degree of maturity of the neutrophils, and the examination of a "thick drop" for malaria and other parasites and as a control for the eosinophil count, since eosinophils are not always distributed evenly in thin films. The results of this screening test will show what further investigations are required, ranging from a hæmoglobin estimation and red

and white cell counts to sternal marrow puncture. Methods for the performance of these tests are described in the first part of the book, while the second deals with their practical clinical applications. There are 87 figures in the text, including many excellent photomicrographs in black and white and two in colour, and eight full or double-page plates, three of which are in colour. The photography is of a very high order. This book is a laboratory manual, not a textbook, but it does contain a vast amount of meticulously precise information and the experience of the lifetime of a great hæmatologist. There is a table of contents, but no index. The paper, type and format of this handy little book are of very good quality. It will provide an interesting and refreshing addition to the library of the hæmatologist.

History of the American Dietetic Association, 1917-1959. Edited by Mary I. Barber; 1959. Philadelphia and Montreal: J. B. Lippincott Company. Sydney: Angus & Robertson, Limited. 8" x 5", pp. 336, with 46 illustrations. Price: 66s.

DIETITIANS were almost unknown in North America and, indeed, in all the world until 1917, when a group of people interested in food and dietetics got together in Cleveland, U.S.A., and founded the American Dietetic Association. The new association immediately started to lay down conditions for the acceptance of students for training in dietetics and qualifications necessary for recognition as dietitians. The association has grown in membership and in standing, and now it has about 14,000 members and can speak authoritatively on all subjects concerned with dietetics.

Much interesting information is given about the progress of dietetics in the United States of America and about the people concerned in this progress. The book is of most interest to members of the association; but much could be learnt from it by hospital administrators and physicians in Australia.

The Artificial Feeding of Normal Infants. By William Emdin, M.D., D.P.H., Ph.D., B.A.; 1959. Cape Town: Howard Timmins. 8¼" x 5", pp. 128, with illustrations and tables. Price: 16s. (English).

THE aim of this book has been to produce a comprehensive account of artificial feeding to meet the needs of nurses, students and medical practitioners. Most of the infant foods in general use (including some not used in Australia) are set out clearly and authoritatively with satisfying detail, so that anyone using this book will soon know exactly what he is using and how to use it. The detail is unnecessarily full for medical students and doctors; but those who lecture nurses on this confusing subject will realize how essential it is to give detailed simple instructions with repetition of the main points. It is very convenient to have all the proprietary preparations in one book, and this book will be a useful addition to the libraries of nurses' training schools.

The book deals entirely with the mechanics and ingredients of food, which makes it a little anachronistic in these days when there is so much emphasis on psychological factors and mother-child relationships; but within this limitation it is accurate and helpful.

The main sections are "Alternatives to Human Milk", "Essentials of Artificial Feeding", "Feeding the Healthy Infant" (including feeding tables for different ages and all products) and "Dietary Supplements". All formulæ are simple, and the general approach is relaxed, with no higher mathematics or emphasis on exact feedings. The baby is always the main consideration. Only the normal baby is considered, and there is no discussion of feeding the sick or difficult child.

The book achieves what it set out to do; but few Australian doctors will feel the need to acquire this book, as this field of medicine is well supervised by the health departments in the various States.

Malariology With Special Reference to Malaya. By A. A. Sandosham, L.M.S. (S'pore), Ph.D. (Lond.), F.R.E.S., F.L.S., F.Z.S., F.R.M.S.; 1959. Singapore: University of Malaya Press. 8½" x 5½", pp. 348, with many illustrations. Price: 59s. 3d.

IN his foreword to this book, John W. Field points out that it is designed as a teaching manual for senior students of the University of Malaya and for post-graduate students of public health. The book contains useful general information on malaria, and the point is made that many of the features of this disease vary quite considerably in different parts of the malarial world.

Malaya entered the field of malaria control very shortly after Ross's discovery of the vector of the disease, and the early efforts in this direction, with the use of anti-larval measures, were attended with considerable success. In addition, Malaya has been the scene of much valuable work on the chemotherapy and chemoprophylaxis of malaria and study of the morphology of the parasites, including the development of rapid diagnostic methods.

The fact that this account is based on malaria as seen in Malaya must be borne in mind in reading the section on residual spraying. The author states that experience in Malaya has not as yet given high hopes for success in the control of malaria with this method. This may be a somewhat pessimistic outlook. Stress is given to anti-larval measures; but the use of insecticides in this respect may well be questioned from the point of view of inducing adult resistance to these compounds. For this reason, too, the subject of expectation of life of the adult vector mosquito is not dealt with in the detail merited by this very important aspect of malaria epidemiology.

The clinical features of malaria are described in the classical fashion—regular paroxysms coinciding with synchronous schizogony. This may be a feature of Malayan malaria, but elsewhere it is often absent in both *vivax* and *falciparum* infections. It is difficult to justify the over-all use of the term "relapse" to include both relapses and recrudescences; for this reason Figures 12 and 13 are misleading. In discussing immunity to malaria, the author has avoided using the term "tolerance", preferring to regard this as relative immunity. Whilst this may be a matter of taste, "tolerance" has found widespread use elsewhere in recent years.

Apart from these points, there is a valuable account of the vectors of malaria in Malaya. There are illustrated keys for the identification of 18 common and widespread Malayan anophelines of a total of about 60 species which are known.

The section on malaria surveys makes available a good account of this subject at a time when previous works are out of print. There are valuable points to guide the prospective fieldworker, both in relationships with the people to be surveyed and in the technical aspects of the subject.

The statement that proguanil is the best drug for the prevention of malaria is open to question. Apart altogether from the point of parasitic resistance to this drug, it is generally considered that chloroquine and amodiaquine are equally effective chemoprophylactic agents. There is no mention of primaquine and its use for the radical cure of *vivax* malaria. It is possible that this may not be considered necessary in a country where malaria is endemic; but this drug has its place in malaria eradication campaigns, and it would be useful for those people, with possible latent infections, who are leaving Malaya for non-malarious areas.

The book should prove a useful introduction to malariology for those concerned with the Malayan area, and its accounts of the malaria parasites and surveys have more general interest.

Atlas of Intracardiac Pressure Curves. By Professor Dr. Otto Bayer and Dr. Hans Helmut Wolter, with an introduction by Professor Dr. André Cournand; 1959. Stuttgart: Georg Thieme Verlag. 11" x 8", pp. 202, with 42 tables.

THIS is a new and unique book—unique in the sense that it is written in three languages, German, English and Spanish. It is not unique in its subject matter. This does not detract from its merit, for it is very well written.

Here the reader will find an excellent presentation of normal and abnormal tracings of the pulse wave in those parts of the circulation accessible to the cardiac catheter. The text is comparatively brief, and the chief attraction of the book is the excellent collection of tracings, the pertinent details of which are described fully. In addition, there is an adequate index, and a bibliography which is adequate but not exhaustive. As Dr. Cournand points out, the bibliography does not do justice to the pioneers.

Examples of pressure tracings in all the common cardiac conditions—mitral stenosis, mitral insufficiency, aortic and pulmonary stenosis, cardiac failure, constrictive pericarditis, pulmonary hypertension and the common congenital malformations—are shown. There is a good cover of work on the pulmonary capillary wedge pressure.

This book can be recommended to all who seek sound basic information on pressure tracings in the heart and lesser circulation.

The Medical Journal of Australia

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COMMUNICATING WITH THE PATIENT.
II: TRANSMITTING.

DR. SAMUEL JOHNSON once remarked that language was the dress of thought. The metaphor, apparently banal at first glance, is really remarkably apt. Those who are skilled in the design of dress and those who are meticulous in its selection know very well that it may both conceal and reveal—often, by a quaint paradox, simultaneously. It may be utilitarian or ornamental, but only rarely need it be ugly. At all these points we may think of language as being the dress of thought. Generally speaking, of course, the metaphor breaks down when we consider that the removal of dress is very revealing, whereas in the absence of language of some sort thought disappears; although it must be conceded that the analogy is maintained in such a situation as that of H. G. Wells's invisible man. As an interesting side-reflection on this, we may recall that in Hans Andersen's story about the emperor's new clothes a carefully developed situation of humbug persuaded everyone to acclaim that the emperor's non-existent clothes were in truth glorious apparel, until the unspoiled vision of a small child exposed the sham. Here the analogy goes somewhat into reverse, for by the careful weaving of humbug language can be made to form a most imposing dress for virtually non-existent thought; it is still, however, the purity and candour of a child-like gaze that can expose the sham.

However, the main practical point in all this is that language may be used advisedly to conceal and to reveal thought. The doctor, seeking to communicate with his patient, needs to bear this in mind. In an article,[1] to which we have referred previously,[2] Ainslie Meares discusses extraverbal and non-verbal communication, as well as literal verbal communication, and stresses the place of the first two of these in the doctor's approach. The most difficult part of an interview, he points out, is when the patient comes to matters of his emotional life; these may be difficult for him to talk about, and the doctor has to keep the interview going. Here the doctor may well make use of "appropriate unverbalized phonation in the form of interrogatory grunts". By this means, Meares suggests, we inform the patient that he has our undivided attention, and that we are waiting for him to tell us quietly of the worry on his mind. Non-verbal communication, silence and other aspects of behaviour are all important here. The establishment of the doctor-patient relationship which allows of effective psychotherapy also depends on extraverbal and non-verbal communication of emotion. Meares refers to various detailed aspects of this matter, which warrant the attention of doctors in general as well as psychiatrists, and we shall refer to only one particular point—the need to reassure the patient at the first interview. Meares writes:

> It does not mean that we tell the patient that he will soon be better, when in fact we know he will not. It means that we communicate the idea to the patient that we understand him in his trouble, and that we will help him and stick by him through to the end. Such an idea cannot be adequately conveyed by the cold and logical use of words. The patient leaves without ever mentioning these things, but he knows them to be true from our behaviour, and the general way in which we have conducted ourselves with him.

The importance to the doctor of understanding all modes of communication is thus obvious.

Of the straightforward verbal communication involved in instructing a patient there is probably much more ignorance than is usually realized. To those who would like to know something of the basic principles of learning as they are understood in educational method and as they apply to medical practice, we can recommend an article by M. L. Skinner and M. Derryberry.[3] Here it is pointed out that acquiring a knowledge of educational method and developing proficiency in its use are long and involved processes, but it is worthwhile to know at least something about the matter. The first principle of learning that is laid down is that all behaviour is motivated, and the motivation comes from within the person, not from forces outside. A person is motivated as he strives to achieve some conscious or unconscious goal he or his group has set. The goal of the patient may be the same as that of the doctor, but more often the goals of the two are quite different.

> People are motivated to do those things which they believe will help them to do something they want, acquire something they desire, or avoid something that is annoying. In other words, they are motivated to do anything that satisfies their wants or contributes to the solution of their problems.

It is a mistake, incidentally, to assume that everyone is striving to be healthy. The second basic principle is that learning is an active process; it occurs only through the person's own efforts. Although it takes time to provide patients with the opportunity to learn things actively, it may well be a complete waste of time to do anything else. Further, as learning is also a continuing process, the doctor may have to provide more than one opportunity for an individual to learn—for example, by giving an instruction to a patient, then having the patient repeat it, and then writing it out for the patient to take away on paper. The third principle is that a person selects what he sees, hears or feels in terms of his past and present feelings and experiences. His

[1] *Lancet*, 1960, 1: 663 (March 26).
[2] MED. J. AUST., 1960, 1: 777 (May 14).
[3] *J. med. Educ.*, 1959, 34: 529 (May).

interests and goals determine what he will learn. Furthermore, and this is so obvious that it is mostly overlooked, what each person learns will be different, because each has a highly personal background of experience and point of view. Here it is fundamental for a doctor to realize that he, because of his background and training, may see certain things differently from his patient; an idea, remark or instruction that seems simple and straightforward to him may have a completely different significance to the patient. People select what to pay attention to and respond to within the boundaries of what they believe or feel. Skinner and Derryberry point out that when people do not observe all the things that others think they should, it is not really random and unaccountable; there is always a reason for what people pay attention to in terms of things which are important to the person or have special meaning to him. Different people seeing the same things will take note of quite different aspects of the subject. Skinner and Derryberry elaborate in a rather amusing fashion the thoughts in the minds of individual members of an audience listening to a lecture on cancer given to a women's group, and this illustrates very skilfully that although information given is identical, the individual's goals, interests and past experiences influence what each member of the audience learns. The fourth principle is that a person will change his behaviour when he sees that the action will help him achieve a goal that is important to him. "Behaviour is seldom changed because a person is told what to do." The physician may give information to his patient, and the information may be understood, but still not acted upon if it conflicts with other values or feelings in the patient's life. Here again the physician's attitude may be quite different from that of the patient, and he must find out about the latter if he is to have the cooperation of his patient. The example is given of a woman with anæmia who is told to eat liver and red meat. She may remember why the physician considers it important, but it may be the custom in her family for meat to go first to the husband and then, if any is left, to the young children.

> If she should place herself first, the disapproval of the grandmother, who lives with them, might be more than she could bear. Also to follow the diet would do violence to her ideas of herself as a wife and mother. It is easier to ignore the physician's suggestion than to offend the grandmother; it is especially easy, if he has only remarked casually, "Eat lots of red meat and liver".

The physician must not only instruct but also take the patient's feelings into account. The fifth principle is that what an individual learns and the behaviour he will adopt depend in large measure on the groups to which he belongs. Group factors influence whether information is accepted or rejected. It is pointed out that these factors are usually hard to identify because they are not ostensible, clear or conscious bases for people's actions, but it is essential to study them.

Skinner and Derryberry refer also to a number of barriers to learning which are of great importance. The first, which will be quite obvious, is that the patient at an interview is usually under a strain and emotionally affected in such a way as to be in a negative state which will interfere with learning. This may not be easily overcome, but it is vital that its existence be acknowledged. The interesting suggestion is put forward that every medical student should have the experience early in his student life of being treated as a clinic patient in a teaching hospital (unknown to the clinic staff as a student). He should go through the whole round, including having his case discussed in front of him by the customary teaching group, and receiving instruction on what he should do about his simulated illness. Later, with his class, he should have a chance to discuss what happened, how he felt, and what instruction he was given, and the latter should be compared with what the physician recorded as his instructions. Experience such as this should go a long way towards an understanding of the patient's point of view. Another barrier is that the information and instruction may not be given in terms of the facilities available to the patient in his particular circumstances. The thoughtful doctor may, by a simple variation in the instruction, overcome such a barrier as this. The third barrier, which is easily forgotten, even though we all know about it, is the frequent difference in meaning assigned to scientific terms by the layman and by the medical profession. Scientific or professional words that have become commonplace to the physician may, Skinner and Derryberry remark, be misunderstood or weighted with fear and misconceptions by someone who has a non-scientific background. The use of simple diagrams or a picture saved from a journal and kept handy may help.

The practical situation at an interview is often not so difficult as this discussion might suggest. Skinner and Derryberry point out that people who come to the doctor are frequently already motivated in the right direction; otherwise they would not come. Secondly, in most cultures patients have confidence in the advice of their doctors and tend to follow it. If the doctor also practises what he preaches in his community, he will greatly reinforce the effectiveness of his teaching in matters of health education. Unfortunately, the scientific approach to communication with the patient is something not usually taught in medical schools and seldom seriously thought about by practising doctors. However, there is no mystery about it; the principles of teaching and learning are commonplace to members of the teaching profession, and are the fruit of experience. It is perhaps not too much to expect that the medical practitioner should pay some attention to them, if his approach to his patients is to be therapeutically effective, especially when it is realized that a doctor is by definition a teacher.

Current Comment.

CYTOLOGICAL EXAMINATION FOR LUNG CANCER.

THE use of the Papanicolaou technique for the cytological detection of carcinoma of the cervix has tended to overshadow its other applications, but reports have been published of its employment, with varying degrees of success, for the detection of cancer in other sites such as the stomach, urinary tract and lung. R. E. Parker and J. D. Reid[1] of Wellington Hospital, New Zealand,

[1] *N.Z. med. J.*, 1960, 59: 68 (February).

have lately published the results of their use of this technique over a five-year period in the examination of sputum and aspirated fluids from patients with suspected lesions of the lung. Most of their material consisted of specimens of sputum and specimens obtained at bronchoscopy from their own hospital, but it included a considerable number of fixed slides submitted from other hospitals and from private practitioners. In the case of sputum, they recommend that five daily specimens should be submitted from each patient, but if the first specimen examined contained obvious tumour cells, they did not proceed with the remainder. The results were reported as "no tumour cells seen", "possible tumour cells present", "probable tumour cells present", and "tumour cells present". In the final assessment of results the first two categories were counted as negative, the second two as positive. In this way Parker and Reid examined a total of 4331 specimens from 1310 patients. In 308 of these patients a diagnosis of cancer in the lung was ultimately established (these included 30 with secondary deposits in the lung). In 62% of patients with proved cancer, the result of the cytological examination was positive, but this figure was increased to nearly 70% when only those for whom three or more specimens were available were included. The over-all proportion of correct positive results in 239 specimens obtained at bronchoscopic examination, in which cases only one specimen was available, was 46%. The percentage of positive findings also varied according to the type of tumour present. Parker and Reid note that their results are intermediate when compared with those of the 12 other published series which they list, in most of which the proportion of correct positive results fell between 48% and 77%, though in the smaller series they ranged from 20% to 88%. This suggests a considerable variation in technique, selection of cases and criteria of malignancy. The number of false positive results is an important test of the reliability of the method. These numbered only 13 (out of 930 patients ultimately regarded as not suffering from any malignant condition), though Parker and Reid consider this figure disappointingly high. Most of these "false positives" were originally reported as "probable", and were due to a variety of causes including, in one case, the mislabelling of specimens. An interesting point raised by Parker and Reid is the fact that several reports have indicated that "in situ" carcinoma is of relatively common occurrence in the respiratory tracts of subjects studied at autopsy—Auerbach *et alii*[2] found this lesion in 5 out of 16 non-smokers and in 47 out of 67 smokers. In one case recorded by Papanicolaou the presence of apparently malignant cells was attributed to intraepithelial changes, but it is clear that cells from such lesions rarely find their way into tracheo-bronchial secretions. Parker and Reid also give a discussion of some technical details which may be helpful to others using the same method. The best indication of the value of the cytological study of bronchial secretions is perhaps the fact that a positive identification of tumour cells was made in 36 out of 63 cases in which a peripheral lesion was present beyond the reach of the bronchosope, and that a positive result was obtained in 22 out of 30 cases of lung metastases from some other site. Exfoliative cytology is not likely to be of practical value as a means of primary screening for lung cancer, but it is evident that it may be helpful in the diagnosis of doubtful cases.

SMALLPOX ERADICATION CAMPAIGN IN CAMBODIA.

AN important example of the WHO policy of eradicating specific infectious diseases is seen in the national campaign to eradicate smallpox which has been launched by Cambodia, in cooperation with WHO. By systematically vaccinating its 4,600,000 people during the next five years, Cambodia expects to put an end to smallpox within its boundaries at a cost of less than 500,000 United States dollars. After successful mass vaccination has been carried out, a comparatively small budget will suffice to maintain a state of immunity in the population. The campaign will be coordinated with WHO's world-wide smallpox eradication programme, which eventually is expected to render the whole world safe from smallpox and put an end to the tedious routine of smallpox vaccination in all countries.

Today, although vaccination against smallpox has been practised for more than 150 years and is one of the simplest, safest and most effective measures in preventive medicine, the disease is still endemic in many countries. According to WHO statistics, within the past four years 56 countries and territories have suffered epidemics of smallpox; in 1958 alone 200,000 cases of the disease occurred in Asia, and a few were introduced into Europe. The eradication of smallpox, WHO experts have pointed out, is largely a question of organization and logistics. It is generally accepted that if 80% of the population is vaccinated or revaccinated within a period of four to five years, smallpox can be eradicated from an endemic area. However, in areas with poor communications and with scattered or nomadic populations, the main problem is how to reach that proportion of the people. In Cambodia, for example, an unknown number of "water nomads" roam the River Mekong and its tributaries and cross freely into neighbouring countries. To vaccinate at least 80% of these "water nomads" will be no small problem.

One of the technical difficulties usually involved in large-scale smallpox vaccination programmes is the rapid loss of potency of the vaccine in hot climates. Now, however, a freeze-dried vaccine has been developed which gives excellent results since it is not affected by heat. It is being produced at the Pasteur Institute in Phnom-Penh, capital of Cambodia, in sufficient quantities for the national eradication campaign. So far, 50,000 people in Cambodia's northern provinces have been vaccinated by WHO/UNICEF-assisted teams, which are also engaged in mass treatment of yaws.

THE TOXICITY OF INHALED SILICA.

THAT particles of coal imbedded in the lung are relatively innocuous, certainly in contrast with silica, was discussed by J. S. Haldane in the early years of this century. His view was that coal was soft, and the particles taken in by breathing had rounded contours and were devoid of sharp edges and apices and therefore caused no laceration, whereas quartz had the opposite characters. Later research has proved clearly that the dangers of silicosis arise as much from chemical as from physical action. In the decade just completed micro-cinematography, using the phase microscope, has been applied to the lung after inhalation of coal dust, and the absence of cytoplasmic injury, despite close juxta-position, has been clearly demonstrated. This conclusion has been fully confirmed in an attractive French investigation by A. Policard and others[1] in which finely divided mixed anthracite and silica dust was breathed by rats; subsequently ultraminute sections were made by a diamond knife, and these were studied by the electron microscope. The living cytoplasm of lung cell and phagocyte in close contact with the coal showed not the slightest trace of degeneration, whilst around each particle of silica there was a zone of denaturation which could not easily be explained by physical action. The authors do not discuss the question whether this degenerate cytoplasm is liable to be invaded by tubercle bacilli, or whether in addition, as many believe, it is directly favourable to the multiplication of these bacilli. The article is illustrated by three large photomicrographs of the high standard we associate with *La Presse médicale*.

[2] *New Engl. J. Med.*, 1957, 256: 97 (January 17).

[1] *Presse méd.*, 1959, 67: 2263 (December 25).

Abstracts from Medical Literature.

GYNÆCOLOGY AND OBSTETRICS.

Induction of Labour by Low Rupture of Membranes.

B. ETON (*J. Obstet. Gynæc. Brit. Emp.*, June, 1959) reports a study of induction of labour by low rupture of the membranes in 500 booked cases and evaluates this method of induction against induction by high rupture of the membranes in reported series. The advantages claimed for high rupture are, he states, preservation of the forewaters as a barrier against intra-uterine infection and the removal of a controlled amount of liquor. The incidence of low rupture of the membranes in this series was 7·4% of booked patients (1946 to 1952). The indications for induction were: toxæmia, 43%; prevention of disproportion, 24%; prolonged pregnancy, 16%; unstable presentation, 5%; previous rapid labour, 5%. Labour was induced and delivery effected in 83% of the toxæmic patients within two days, and in 91% within three days. The fœtal mortality in this group was 10%. It was found that the perinatal mortality rate increased with the induction-delivery interval. The author views this result as far from satisfactory. Moreover, one of these mothers developed eclampsia after induction and another after delivery. As treatment for the prevention of disproportion, low rupture of the membranes was performed on 119 multigravidæ, the indications being a history of previous disproportion, of long labour or stillbirth attributable to mechanical difficulties, or of having given birth to an excessively large baby when another large fœtus was anticipated. There were two stillbirths in this group. Eighty-one inductions were performed for prolonged pregnancy, with a fœtal mortality rate of 5%. The author considers that the "ripe" cervix is helpful in planning treatment in this condition, but all known diagnostic criteria may not permit a definite diagnosis of post-maturity. Induction of labour by low rupture of the membranes was performed for unstable presentation in 25 multigravidæ and in five patients with breech presentations. It was noted that parity had no influence on the success rate of surgical induction but that age was a factor. Among patients under 35 years of age, 15% were still undelivered after 48 hours, whereas 28% of patients over 35 years were undelivered after this period. By comparison with series of induction by high rupture of the membranes, the author considers that low rupture is followed by a shorter latent period. There was no significant increase in the forceps rate in these induced labours. Cæsarean section was performed on five patients. High rupture of the membranes has a disadvantage if the liquor is scanty and thick and will not flow through the cannula. Also, the cannula may strike an unsuspected placenta prævia. After comparison of the maternal morbidity in this study with other reported series the author concludes that there is no evidence that high rupture of the membranes is safer than low rupture from the point of view of prevention of infection. It is noted that the maternal morbidity rate did not increase with the duration of the induction-delivery interval. Among the 500 patients in this series there were 29 stillbirths (5·8%) and 10 neonatal deaths (2%). The perinatal mortality attributable to induction was 0·4%. A comparison with Smythe's results after high rupture of the membranes favours induction by low rupture. There was only one case of prolapse of the cord in this series, an incidence no greater than in labours which are not induced.

Placenta Accreta.

W. G. MILLAR (*J. Obstet. Gynæc. Brit. Emp.*, June, 1959) reports on a clinical and pathological study of placenta accreta based on 14 cases studied at the Royal Maternity Hospital, Glasgow, between 1934 and 1953. The incidence was one in 8000 among booked deliveries, and is variously quoted in the literature at from one in 2000 to one in 31,000 deliveries. The author estimates that the condition is likely to be found about once in every 178 manual removals of the placenta. Factors that many adversely affect the development of the decidua such as previous endometrial trauma or infection were not significant in this series. However, a history of previous manual removal of the placenta was of importance as it had been performed in five of the 14 patients. The earliest diagnosis of placenta accreta in the series was at the twenty-fourth week, but the condition has been noted in the literature as early as the tenth week, suggesting that it is present before the definitive placenta has completely formed. The incidence of placenta prævia in this series was 21%, compared with a usual incidence of 3%. Placenta membranacea was present in three of the 14 patients. The association of these two rare conditions has been noted by other authors. Photomicrographs of histological studies of placenta accreta are compared with sections from normal placentas near term. Microscopically, the predominant feature of most cases of placenta accreta was absence of the decidua. The villi showed no particular changes; there was no evidence of the normal chorionic plate, and there was increased vascularity of the uterine muscle and hyalinization of its superficial layers. Clinically, no significant feature occurred during the antenatal period to suggest the presence of placenta accreta. Six patients had spontaneous vaginal deliveries, two had breech deliveries, one had forceps extraction, and five had Cæsarean section (three elective). Spontaneous post-partum hæmorrhage occurred in six of the nine patients delivered vaginally. In the remaining three patients the placenta accreta was complete and no hæmorrhage had occurred. Two attempts at manual removal of the placenta in one of these patients caused brisk bleeding necessitating hysterectomy. The other two patients developed acute inversion of the uterus and were admitted to hospital in a moribund state. The management of each case is summarized and results were as follows: expression of the placenta was attempted unsuccessfully in four patients and all died before anything else could be done. Manual removal was attempted without success in two patients, one of whom died a few hours later, the other after subsequent hysterectomy. One patient who had a severe post-partum hæmorrhage was dead on arrival at hospital. Placenta accreta was discovered in five cases at Cæsarean section; in two the placenta was forcibly stripped off the uterus, resulting in uncontrollable hæmorrhage and the death of both patients. In the remaining three patients subtotal hysterectomy was done immediately and all made a good recovery. This study, together with reported series from the literature, indicates that immediate hysterectomy gives the best results and that the earlier it is done the lower the mortality. Exceptional circumstances which might justify conservative treatment are: complete placenta accreta, the absence of spontaneous post-partum hæmorrhage, and recognition of the condition before too vigorous attempts had been made to remove the placenta. Complications associated with placenta accreta in this series included inversion of the uterus in two patients, spontaneous rupture of the uterus in one patient (a case of placenta percreta), and placenta prævia-membranacea-accreta in two patients.

Twenty-Four-Hour Obstetric Anæsthesia Coverage.

W. A. CULL (*J. Amer. med. Ass.*, January 30, 1960) presents a plea for the use in obstetric hospitals of specialized anæsthetists throughout the 24 hours. In the United States, of more than four million births per year, 75% are conducted with the aid of some form of analgesia or anæsthesia or both. Of all maternal deaths in the United States, 10% are due to anæsthesia, and inhalation of vomitus is probably the greatest cause of these deaths. This cause could be reduced to almost nil by the use of skilled anæsthetists, but obstetric anæsthesia is frequently administered by a completely inexperienced person rather than by an expert. The advantages and disadvantages of various techniques or drugs are outweighed by the ability of the anæsthetist, whose method is secondary in importance. Rapid advancement in the field of obstetric anæsthesia can take place only when a sufficient number of interested anæsthetists are attracted into this field. In planning twenty-four-hour coverage, close liaison must occur between the obstetric, anæsthetic and nursing services and the hospital administration, and the anæsthetist should be on first call and be in the hospital for the twenty-four-hour period. In one hospital in which such a coverage was provided there were approximately 4000 deliveries, with 3800 to 3900 of the patients receiving anæsthesia of some form; there have been no anæsthetic deaths since 1952.

The Placenta and the Fœtus.

R. HEPNER AND M. BOWEN (*J. Amer. med. Ass.*, January 30, 1960) have studied the conception products of all deliveries at the University of Missouri Medical Centre over a two-year period in an attempt to detect possible relationships between abnormalities in the placenta and subsequent aberrant growth in the infant. The study group was composed of those deliveries in which the placentas were noted to have infarcts, fibrinoid degeneration, areas of old or recent abruption, degeneration of cotyledons, and severe malformations. The control group was

composed of the rest of the deliveries. There were 262 placentas in the study group, and the corresponding 262 infants were compared with the 392 infants born with normal placentas. A statistically significant relationship between placental abnormalities and peculiarities of post-natal growth, particularly nutritional disturbances, was seen. The authors consider that a gross examination of the placenta may be a useful clinical tool to forewarn the physician of some common problems of the first six months of life.

Contemporary Therapy of the Menopausal Syndrome.

H. S. KUPPERMAN, B. B. WETCHLER AND M. H. G. BLATT (*J. Amer. med. Ass.*, November 21, 1959) present a survey of current methods of treatment of the menopausal syndrome. Three aspects were considered, namely, psychotherapy, sedation, and hormonal therapy. Psychotherapy is considered most important, including kindly treatment of the patient and a truly sympathetic reception of her complaints. The patient's mode of living should be discussed and abnormalities such as dietary deficiencies, overwork and lack of help from the family should be adjusted. This may considerably improve the patient's mental state and thereby prevent an exacerbation of the menopausal syndrome. Sedation is important, but phenobarbital addiction should be guarded against. A patient so addicted may show symptoms not unlike those noted in the climacteric and the result would make the treatment worse than the disease. A number of ataractic drugs were used and the results obtained were no better than those after treatment with phenobarbital and slightly better than those obtained with a placebo. Specific hormone therapy used included: (i) œstrogens, (ii) œstrogens and androgens, (iii) androgens alone, and (iv) œstrogens in conjunction with tranquillizers or sedatives. These were administered orally, by injection, by pellet, vaginally or by inunction. Vaginal smears were taken in each case but could not be depended upon for true grading of response. The best results were obtained with ethinyl œstradiol and conjugated equine œstrogens, alone or in combination with androgens. Stilbœstrol produced nausea in 20% of cases. Withdrawal bleeding affected 18% of those receiving combined free and ethinyl œstradiol. When androgens were added to the œstrogen, increased physical vigour and *joie de vivre* became noticeable. An increase in libido was noticed by some patients. The general degree of improvement in the patient's well-being attributable to androgen therapy had a decided effect in relieving the anxieties and nervousness of which she originally complained. The addition of phenothiazine compound appeared to give a better result than the use of the hormone combinations alone. For the treatment of the surgical menopause, the authors find the best results are obtained by inserting three pellets of 25 mg. of œstradiol and two pellets of 75 mg. of testosterone propionate beneath the anterior sheath of the rectus muscle during closure of the abdominal wall. Pellet implantation of œstrogens is contraindicated in any patient who has a uterus or ovaries. Appropriately instituted therapy will create a happier patient and a better psychological clinical picture.

Congenital Absence of Vagina.

D. C. MCEWEN (*Canad. med. Ass. J.*, October 1, 1959) reviews the generally accepted modern procedures for the construction of an artificial vagina in cases in which there is congenital absence of this structure. He suggests a simple modification of one method, and describes two cases in which this led to a successful anatomical result. This modification combines the principles of simple pressure to form the lower half of the vagina in the first stage, and simple reconstruction to form the upper part of the vagina in the second stage. A mould was left *in situ* for almost four months after the second stage reconstruction. In both the cases described an excellent result was achieved, simply, safely and without serious complication.

The Management of the Cytology Test.

A. F. ANDERSON (*J. Obstet. Gynæc. Brit. Emp.*, April, 1959) discusses the broad principles involved in vaginal smear cytology and reports on the results obtained at Edinburgh. He considers that the cytologist should not be content merely to report on smears submitted, but that he should be interested in following up positive reports, and that he should therefore be given some hint of the clinician's suspicions or otherwise. He states that the smear method is a cytology test and not a proof such as biopsy can be. Biopsy confirmation is mandatory in confirming the diagnosis of cancer. Moreover, biopsy may need to be of such an extent as to act as treatment. Small and early lesions may be missed by multiple punch biopsies and cone biopsy with the cold knife is desirable. Among a total number of 19,464 patients in whom no malignant lesion was suspected, there were 197 (1%) in whom the result of cytological examination was positive and the presence of a malignant lesion was confirmed by biopsy. Of these patients, 73% had pre-invasive lesions and 27% invasive lesions. The average age of patients with pre-invasive carcinoma was 38 years, and that of patients with invasive carcinoma was 50 years. The author then discusses the question of pre-invasive cancer and states that it is not known whether all pre-invasive neoplasms eventually invade, and if they do not all invade, which will and which will not. It cannot be denied that spontaneous regression of "in situ" cancer may occur, but it is more likely that such lesions have been removed by biopsy rather than that they have regressed. The only final diagnosis of carcinoma-in-situ is the careful examination of the total specimen. The author states that the role of cytology in the diagnosis of endometrial cancer is on a different footing. The unsuspected case of cancer of the body of the uterus is much rarer, and the specimen taken from curettage is much superior as diagnostic material. To illustrate this, the author tabulates 12 cases of carcinoma of the body of the uterus; cytological examination in four cases gave false positive results, in four false negative results, and in four correct positive results; in none of these was treatment influenced by the result of cytological examination. However, in exceptional circumstances cytological examination may be of value in diagnosing carcinoma in the upper parts of the genital tract, and the author cites two examples. In assessing the usefulness of exfoliative cytology, investigations of body cancer should be kept separate from those of cervical cancer. The author concludes by stating that cancer of the uterine cervix is accessible and common and it is here *par excellence* that cytology has proved of real help to patients. Cytology is now as much a part of the routine examination of the cervix in Edinburgh as is the use of the speculum.

Pseudomyxoma Peritonei.

P. MALPAS (*J. Obstet. Gynæc. Brit. Emp.*, April, 1959) reports three cases of pseudomyxoma peritonei and discusses this condition in reference to diversity of origin, its relation to benign pseudomucinous cyst of the ovary, and the importance of the massive peritoneal reaction usually present. Theories of ætiology are traced from that of Virchow (myxomatous degeneration of the peritoneum) to that of Willis (1952), who considered that pseudomyxoma peritonei was not a single entity of uniform causation and prognosis but the result of profuse intraperitoneal extravasation of mucoid secretion of any origin. The first patient in the series developed pseudomyxoma peritonei five years after panhysterectomy for carcinoma corporis uteri. After three further operations, the patient died, four and a half years after first recognition of pseudomyxoma peritonei. The second patient, aged 20 years, had had two radical operations for malignant teratoma of the ovary; pseudomyxoma peritonei was found at laparotomy a few weeks after the second operation, and further operation was necessary two months later to remove gelatinous masses from the abdomen; death occurred one year after the appearance of the original ovarian tumour. The third patient, aged 56 years, had an apparently uncomplicated pseudomucinous cyst removed from the left ovary; histologically this proved to be a primary adenocarcinoma of the ovary. Nine months later the patient developed intestinal obstruction associated with pseudomyxoma peritonei. The author considers that these three cases support the contention that pseudomyxoma peritonei has a diverse ætiology, and that most, if not all, cases of pseudomyxoma peritonei prove to be malignant in the long run. He considers the weight of evidence suggests that pseudomyxoma peritonei and benign pseudomucinous cyst of the ovary are not causally related. The tendency to recurrence of this condition suggests that cellular elements must be explanted. The author concludes that the prevailing idea that pseudomucinous cysts must be removed entire has little or no justification. An accidental spill at operation rarely leads to any complication, and certainly not to the development of pseudomyxoma peritonei. The prolonged survival time of many of these patients is thought by the author to be due to restriction of the neoplasm to the abdomen, the rarity of metastases and the walling off of the lesion by the intense peritoneal reaction.

On the Periphery.

"THE CARBOLIC ENGINE" OF JOSEPH BARON LISTER, O.M.

OPERATIVE SURGERY, detective stories and science fiction, three of the major pastimes of the twentieth century, existed only as crude, bloody, unæsthetic rivulets until the 1870's. Then, from a most unlikely-looking mechanism, all three received an amazing impetus. This device, known for short as "Puffing Billy", was described by Lister as a "steam carbolic spray producer". Lister's carbolic spray came, spread throughout the world in a decade, and went, leaving a line or so of printer's ink in most elementary history books, because with it in that decade Lister established scientific surgical technology for ever.

Very few intact specimens of the eight modifications of the "steam carbolic spray producer" have survived. One, possibly the only working model, happens to be in Sydney, probably because Dr. George Hogarth Pringle, one of Lister's fellow house-surgeons at the old Edinburgh Royal Infirmary, so intensely admired Lister's methods that he adopted them at Parramatta where the aftermath of the Crimean War had stranded him. The Sydney model had little wear and tear. Pringle died at sea in 1872, and the duplex ejectors had been deliberately and cunningly occluded in the nineteenth century, and most of Pringle's successors in Australia have been too busy to think—a dispensation of Providence common to many members of our profession.

Lister's spray affected surgical and general history. As Thomas Babington, Lord Macaulay, could have remarked, the phenol spray is something every schoolboy reads about but never sees, even if he graduates in medicine later. Yet this spray enabled Lister to turn surgery from a bloody shambles, practised in desperation as a last resort, into a minor applied science with an almost certainly predictable outcome. In fact, asepsis, anæsthesia and artery forceps converging in the 1880's made operations so safe that nowadays some major operations appear trivial. Any doctor inspecting the Pythagorean patterns on many a middle-aged abdomen realizes that surgery is often used by the "id" as an autistic retreat for the "super-ego" from emotionally charged situations. A fortnight in hospital and a "laparotomy" are less damaging to the "ego" and the bank-balance than a moral or melancholic breakdown; and very often the surgeon deceives himself as well. The number of women whose breasts were removed twenty years ago for "mastitis", a hormonal disorder, appals any doctor today. How often was the coccyx removed for coccygodynia? Some of us (and fortunately many of our intelligent patients) have heard of chronic remunerative appendicitis, first described in a leader in the *British Medical Journal*—a leader written more in anger than in sorrow. This disease is much more prevalent than the well known, but very uncommon killer, acute appendicitis, in which rapid, competent surgical intervention, made possible by Lister, stands between life and death.

Unfortunately the fact that, for instance, I am a "registered person" (as the *Medical Act* describes me), or that someone else is a Fellow of the Royal College of Surgeons, proves nothing more than the fact that we can write English and have had, at some time in the past, a reasonably good memory for the examinable material set us—no more, no less. Because registerable qualifications make us neither psychiatrists nor saints, many a surgical operation since Lister has been mere psychocatharsis. This is not Shavian cynicism, but an explanation of Lister's gift to doctors, which allows us now safely to put into effect Shakespeare's profoundly tragic comment in Lear: "He hates him that would upon the rack of this tough world stretch him out longer." I refer to incomparably less drastic procedures than leucotomy.

That Lister's "carbolic engine" accelerated the output of science fiction remains an unnoticed fact, but it was the prototype of "The Time Machine", which turned the trickle of science fiction into a roaring flood. Moreover, Lister's spray was part of the surgical environment of Sir Arthur Conan Doyle in his student days in Edinburgh, and part of the acknowledged educational background from which "Sherlock Holmes" emerged. "Sherlock Holmes" popularized detective stories to an extent which was not of its essence evil, until the iconoscope ("T.V." to you) offered science fiction and detective stories as a substitute for thought—for thinking is a rare and painful process. If this statement seems to be obscure, go into any urban home during a television programme and watch the viewers' faces.

Wells's "Time Machine".

In 1895, H. G. Wells catalysed the output of science fiction with his famous story "The Time Machine, An Invention". His story was read by millions. What is the "Time Machine" if it is not "Puffing Billy" at work on a layman's imagination? Here is Lister's engine, in Herbert George Wells's own words:

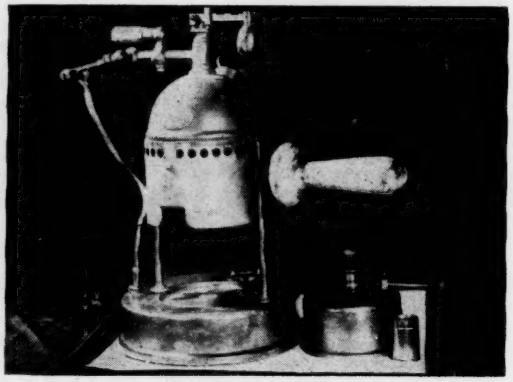

FIGURE Ia.
Lister's steam carbolic spray producer.

The Time Traveller looked at us, and then at the mechanism. "Well?" said the psychologist. "This little affair," said the Time Traveller, resting his elbows upon the table and pressing his hands together above the apparatus, "is my plan for a machine to travel through time. You will notice that it looks singularly askew, and that there is an odd twinkling appearance about this bar, as though it was in some way unreal. Also, here is one little white lever, and here is another."

The medical man got up out of his chair and peered into the thing. "It's beautifully made," he said.

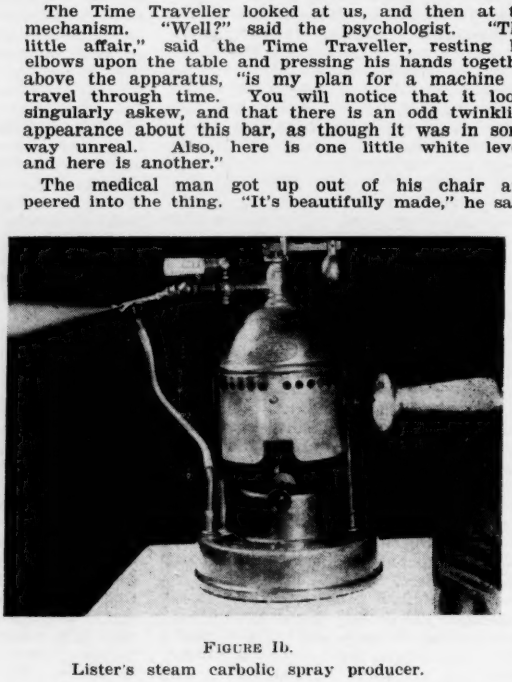

FIGURE Ib.
Lister's steam carbolic spray producer.

And in just those words it has been described spontaneously by everyone to whom I have shown the apparatus.

"It took two years to make", retorted the Time Traveller. Then when we had all imitated the action of the medical man, he said: "Now I want you clearly to understand that this lever being pressed over, sends the machine gliding into the future, and this other reverses the motion." I am absolutely certain there was no trickery. There was a breath of wind, and the lamp flame jumped. The little machine suddenly swung round, became indistinct, was seen as a ghost for a second perhaps, as an eddy of brass; and it was gone—vanished! Everyone was silent for a moment.

Then Filby said he was damned. The psychologist recovered from his stupor, and suddenly looked under the table. At that time the Time Traveller laughed cheerfully. "Well?" he said, with a reminiscence of the psychologist. Then, getting up, he went to the tobacco jar on the mantel, and with his back to us began to fill his pipe.

You will note that Lister's mechanism also "looks singularly askew" and has two levers to control it, is "beautifully made" and contains a lamp flame and is "made of brass". I had often wondered where Wells got his idea for this "Time Machine"; my search has ended.

Sir Arthur Conan Doyle.

Meanwhile, Dr. Conan Doyle, at first a general medical practitioner, tried ophthalmology and took rooms in Baker Street, London, and failing as a better-or-worse doctor, became the spiritual father of "whodunits". In 1959, the centenary year of the birth of Conan Doyle, his many

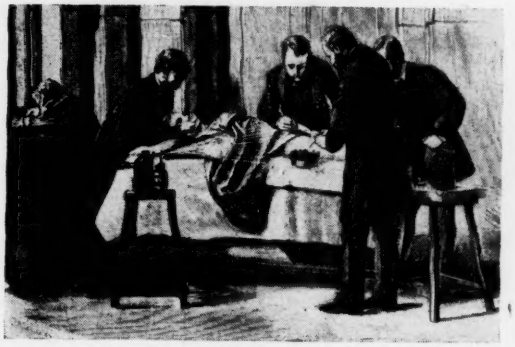

FIGURE II.

An aseptic operation in 1885. (From Sir Watson Cheyne's *Manual on the Antiseptic Treatment of Wounds*, London, 1885.) This figure represents the general arrangement of surgeon, assistants, towels, spray etc., in an operation performed with complete aseptic precautions. The distance of the spray from the wound, the arrangement of the wet towels, the position of the trough containing the instruments, the position of the small dish with the lotion, the position of the house surgeon and dresser, so that the former always has his hands in the cloud of spray, and the latter hands the instruments into the spray and various other points, are shown.

biographers failed to evaluate his training at Edinburgh, where he was born and educated in the applied science, medicine. In the original introduction to his collected works, Sir Arthur Conan Doyle states with repetitious emphasis the effect of the medical training he received at Edinburgh University on his creation "Sherlock Holmes". To that preface the reader must turn for further details, especially of the influence of Dr. Bell on the Edinburgh medical graduates of that generation, more particularly because Dr. Bell's portrait is displayed with misleading explanation and emphasis in the public vestibule of the so-called "Institute of Anatomy" at Canberra where, with little merit and no advantage, it catches the eye of thousands.

One of Conan Doyle's "Tales of Medical Life" describes in contemporary colours the operating "theatre" and "Puffing Billy"; this was written by Dr. Doyle when Lister was still struggling hard for recognition of antiseptic methods which he used after Louis Pasteur's discovery of the bacterial cause of sepsis. Sir Arthur Conan Doyle's collection of short stories called "Round the Red Lamp" describes Lister's carbolic spray in this (synoptic) extract:

"His First Operation."

It was the first day of term, and the third year student was talking to the first year student.

"Let me see," said the third year student, "you have never seen an operation?"

"No."

"Then this way please."

The novice squared his shoulders and made a gallant attempt to look unconcerned.

"There's no sense in funking. If you don't go today you must go tomorrow. Better get it over at once. Come on"; and they joined the throng to the theatre. Tiers of horse-shoe benches, rising from the floor to the ceiling, were already packed, and the novice as he entered saw vague curving lines of faces in front of him, and heard the deep buzz of a hundred voices and sounds of laughter from somewhere above him. His companion spied an opening on the second bench, and they both squeezed into it.

"This is good," the senior student whispered. "You'll have a fine view of it all."

Only a single row of heads intervened between them and the operating table. It was of unpainted deal, plain, strong and scrupulously clean. A sheet of

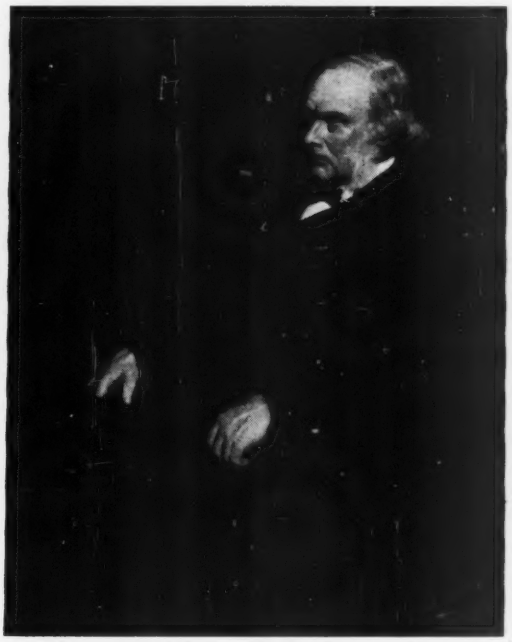

FIGURE III.

Lord Lister; after a portrait by Mr. J. H. Lorimer, R.S.A., 1895.

brown waterproofing covered half of it; and beneath stood a large tin tray full of sawdust. On the farther side, in front of the window, there was a board which was strewed with glittering instruments. Two young men lounged in front of this: one threading needles, the other doing something to a brass coffee-pot-like thing which hissed out puffs of steam.

"Who are the two men at the table?"

"Nobody—dressers. One has charge of the instruments and the other of the puffing Billy. It's Lister's antiseptic spray, you know, and he is one of the carbolic acid men. He and the leader of the cleanliness-and-cold-water school hate each other like poison."

A flutter of interest passed through the closely packed benches as a woman in petticoat and bodice was led in by two nurses. A red, woollen shawl was draped over her head and round her neck. The face which looked out from it was that of a woman in the prime of her years, but drawn with suffering and of a peculiar beeswax tint. Her head drooped as she walked, and one of the nurses, with her arm round her waist, was whispering consolation in her ear. She gave a quick side glance at the instrument table as she passed, but the nurses turned her away from it.

"What's wrong with her?" asked the novice.

"Cancer of the parotid. There's hardly a man would dare follow it. Ah, here he is himself."

As he spoke, a small, brisk, iron-grey man came striding into the room, rubbing his hands together as he walked. He had a clean-shaven face of the Naval officer type, with large, bright eyes, and a firm, straight mouth. Behind him came his big house surgeon with his gleaming pince-nez and a trail of dressers, who grouped themselves into the corners of the room.

"Gentlemen", cried the surgeon in a voice as brisk as his manner. "We have here an interesting case of tumour of the parotid now assuming malignant characteristics, and therefore requiring excision. On to the table, nurse! Thank you! Chloroform, clerk! Thank you! You can take the shawl off, nurse!"

The woman lay back upon the waterproofed pillow and her murderous tumour lay revealed. In itself it was a pretty thing, ivory white with a mesh of blue

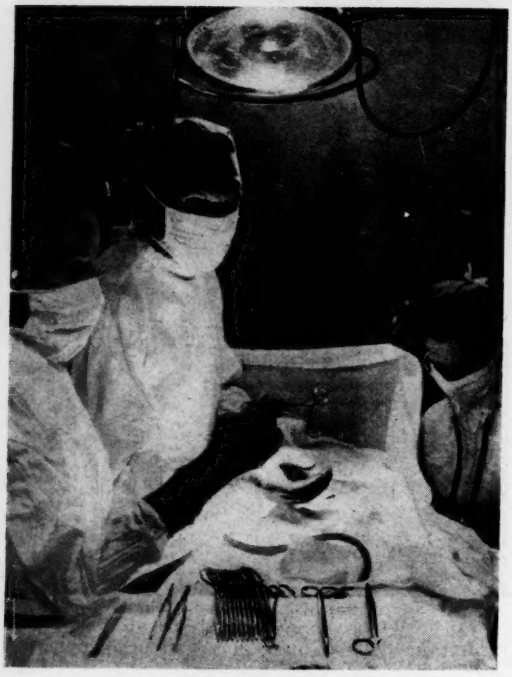

FIGURE IV.
The modern paraphernalia of asepsis.

veins, and curving gently from jaw to chest. But the lean, yellow face and the stringy throat were in horrible contrast with the plumpness and sleekness of this monstrous growth. The surgeon placed a hand on each side of it and pressed it slowly backwards and forwards.

"Adherent at one place, gentlemen," he cried.

"The growth involves the carotids and jugulars, and passes behind the ramus of the jaw, whither we must be prepared to follow it. It is impossible to say how deep our dissection may carry us. Carbolic tray, thank you! Dressing of carbolic gauze, if you please! Push the chloroform, Mr. Johnson. Have the small saw ready in case it is necessary to remove the jaw!"

The patient was moaning gently under the towel which had been placed over her face. She tried to raise her arms and to draw up her knees, but two dressers restrained her. The heavy air was full of the penetrating smells of carbolic acid and of chloroform. A muffled cry came from under the towel and then a snatch of a song, sung in a high, quavering, monotonous voice.

The novice, with eyes which were dilating with horror, saw the surgeon pick up the long, gleaming knife, dip it into a tin basin and balance it in his fingers as an artist might his brush. Then he saw him pinch up the skin above the tumour with his left hand. And then suddenly, with a groan, his head pitching forward and his brow cracking sharply upon the narrow, wooden shelf in front of him, he lay in a dead faint.

When he came to himself he was lying in the empty theatre with his collar and shirt undone. The third year student was dabbing a wet sponge over his face, and a couple of grinning dressers were looking on.

"All right," cried the novice, sitting up and rubbing his eyes; "I'm sorry to have made an ass of myself."

"Well, so I should think," said his companion. "What on earth did you faint about?"

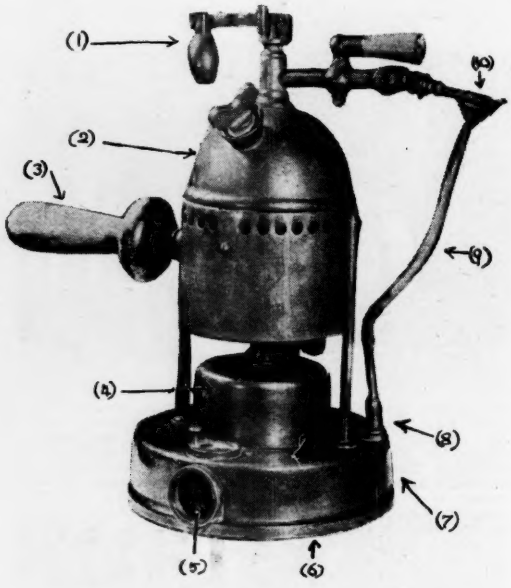

FIGURE V.
Lister's steam carbolic spray producer: 1, governor of safety-valve (set at 50 lb. to the square inch); 2, superheated steam generator; 3, carrying handle (wooden); 4, ethanol tank (the flame demanded chloroform rather than ether as an anæsthetic); 5, window in tank for level of 1:20 carbolic solution; 6, green baize underfelt; 7, phenol tank; 8, brass sieve ("carbolic acid" was a very crude mixture in 1870); 9, rubber tube leading 1:20 phenol solution to lower ejector (Bernoulli's theorem) (the rubber is not the original); 10, upper steam ejector—cold, from adiabatic expansion (compare kerosene refrigerator).

"I couldn't help it. It was that operation."

"What operation?"

"Why, the cancer."

There was a pause, and then the three students burst out laughing.

"Why", said the senior student, "there never was an operation at all. They found the patient didn't stand the chloroform well, and so the whole thing was off. We had been given a racy lecture, and you fainted just in the middle of his favourite story."

Of all this colourful picture, the "theatre" persists only as a name (an appropriate one for the now disused theatres—for example, the Maitland at Sydney Hospital or the Scot Skirving at Royal Prince Alfred Hospital). Chloroform has gone with "Puffing Billy" (no one could use ether and its naked flame), and phenol too has disappeared. The autoclave, another means of sterilization using superheated steam, does most of the work of Lister's boiler, and less corrosive antiseptics are used on human skin. Nevertheless, the destruction of all contaminant

bacteria is not yet a practicable certainty. So Lister's problem remains, to the exasperation and challenge of all of us, not completely solved.

GODFREY HARRIS,
Councillor.

Royal Australian Historical Society,
Sydney.

References.

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British Medical Association.

WESTERN AUSTRALIAN BRANCH: ANNUAL MEETING.

THE annual meeting of the Western Australian Branch of the British Medical Association was held at the Dalkeith Civic Centre, Dalkeith, on March 12, 1960, DR. D. D. KEALL, the President, in the chair.

PRESENTATION OF B.M.A. PRIZE MEDALLION.

Dr. D. D. Keall presented the B.M.A. Prize Medallion to Dr. C. G. Picton-Warlow.

RETIRING PRESIDENT'S ADDRESS.

Dr. D. D. Keall delivered his Retiring President's address entitled "Interpersonal Relations in the Medical Profession" (see page 833).

INDUCTION OF PRESIDENT.

Dr. Keall introduced the incoming President, Dr. D. M. Clement, and vacated the chair in his favour.

ANNUAL REPORT OF COUNCIL.

The annual report of the Council for the year ending March 12, 1960, was adopted. The report is as follows.

The President and members of the Council of the British Medical Association (Western Australian Branch) have much pleasure in presenting the sixty-first annual report of the Branch for the year ending March 12, 1960.

Membership.

The membership of the Branch has increased during the twelve months ended December 31, 1959, by a net amount of 12, as follows:

Membership at December 31, 1958		712
Losses:		
Transferred to other Branches	30	
Resigned	9	
Terminated—unfinancial	5	
Deceased	4	
	—	48
		664
Gains:		
Transferred from other Branches	31	
Elected	26	
Membership reinstated	3	
	—	60
Membership at December 31, 1959		724

Obituary.

With deep regret we record the deaths of the following members which occurred during the year: Dr. K. F. Abernethy, Dr. S. E. Craig, Dr. J. J. Holland, Dr. M. Siglin. The sincere sympathy of the Branch is extended to the families of these late members.

Congratulations.

Council extended congratulations to Dr. John Ralph Donaldson on the award by Her Majesty of the Order of the British Empire.

Entertainment.

Sir David Campbell and Professor R. B. Green, who visited Western Australia on behalf of the General Medical Council, were entertained at a buffet dinner held in the Council Room.

The Federal Minister for Health, Dr. Donald Cameron, and the Director-General, Dr. Arthur John Metcalfe, were also entertained by Council during a visit to Perth.

Council entertained all 1959 medical graduates of the University of Western Australia at a short informal gathering in the Council Room. It is proposed that this will be an annual event.

Meetings.

In addition to the annual meeting, six general meetings of the Branch were held. The subjects of these meetings were as follows:

April: Programme of 16 mm. films.

June: "The Treatment of Acute Myocardial Infarction", Dr. Rae Gilchrist.

July: "Disorders of the Biliary Tract", Professor R. Farquharson.

August: "Reversible Glomerular Lesions in Toxæmia of Pregnancy", Professor R. Kark.

September: "Modern Practice and Trends in Ophthalmology", Dr. A. Lamb.

October: "The Role of Cardiac Catheterization in the Diagnosis of Heart Disease", Dr. O. B. Tofler; "Percutaneous Splenoportography", Dr. M. Traub.

Convocation.

Two meetings of convocation were held during 1959. Major items discussed were the definition of a specialist, the extension of pharmaceutical benefits and the proposal to form a Medical Association of Australia.

Council Meetings.

Twelve meetings, including one special meeting, of the Branch Council were held. The record of attendances is as follows:

C. W. Anderson (Past President)	10
A. A. Barr (Councillor)	11
D. M. Clement (Vice-President)	12
H. L. Cook (Councillor)	10
D. E. Copping (Councillor)	12
A. L. Dawkins (Chairman of Convocation)	11
P. D. Goatcher[1] (Honorary Treasurer)	9
W. B. C. Gray (Councillor)	12
L. I. Henzell (Commissioner of Public Health)	8
J. T. Irvine (Councillor)	11
D. D. Keall (President)	12
R. L. Leedman (Honorary Secretary)	12
F. C. Macaulay (Assistant Honorary Secretary)	12
J. B. Mathieson (Commonwealth Director of Health)	11
R. S. W. Thomas (Councillor)	8

Office Bearers and Councillors, 1960.

The following have been elected for 1960:

President: Dr. D. M. Clement.

Vice-President: Dr. W. B. Macdonald.

Honorary Secretary: Dr. F. C. Macaulay.

Honorary Treasurer: Dr. P. D. Goatcher.

Honorary Assistant Secretary: Dr. D. E. Copping.

Chairman of Convocation: Dr. H. L. Cook.

Federal Councillors Elected for 1960: Dr. C. W. Anderson and Dr. D. M. Clement.

The following have been elected as the five ordinary members of Council for 1960: Dr. P. W. Atkins, Dr. M. de C. Clarke, Dr. W. B. C. Gray, Dr. A. A. Merritt, Dr. H. H. R. Nash.

It is desired to express on behalf of the Branch the warmest appreciation of the work done by the retiring Councillors.

Representation.

The Branch was represented at various meetings and conferences during the past year as follows:

Council of the British Medical Association: Dr. Miles Formby.

Federal Council of the British Medical Association in Australia: Dr. C. W. Anderson and Dr. D. M. Clement.

Faculty of Medicine (University of W.A.): Dr. Leigh Cook.

Australasian Medical Publishing Co. Ltd.: Dr. C. W. Anderson, Dr. D. M. Clement and Dr. Leigh Cook.

The Medical Journal of Australia (Editor's Representative in Western Australia): Dr. Leigh Cook.

State Health Council: Dr. D. M. Clement, Dr. Leigh Cook, Dr. I. O. Thorburn and Dr. M. F. Williams.

Health Education Council: Dr. A. A. Barr.

Nurses' Registration Board: Dr. L. E. Le Souef and Dr. R. H. Nattrass.

[1] Absent overseas from November, 1959, to February, 1960.

Silver Chain Association: Dr. C. W. Anderson.

Dental Board: Dr. I. O. Thorburn.

College of Dental Science: Dr. H. E. H. Ferguson.

Joint Committee with Underwriters' Association: Dr. Leigh Cook, Dr. H. M. Hill and Dr. G. B. Maitland.

St. John Ambulance Association: Dr. A. L. Dawkins.

Optometrists' Registration Board: Dr. D. D. Paton.

Sex Education (Parents and Citizens' Association): Dr. I. O. Thorburn.

Protection of Practices: Dr. L. A. Hayward and Dr. H. H. Stewart.

Cancer Council of Western Australia: Dr. F. C. Macaulay and Dr. A. A. Merrit.

Western Australian Council of Social Service: Dr. C. W. Anderson.

British Medical Agency Company: Dr. J. P. Ainslie, Dr. C. W. Anderson, Dr. A. L. Dawkins, Dr. P. D. Goatcher, Dr. R. D. McK. Hall, Dr. D. D. Keall, Dr. H. Macmillan, Dr. A. T. Pearson and Dr. J. H. Stubbe.

Medical Library of Western Australia: Dr. E. R. Beech, Dr. Leigh Cook and Dr. G. A. Kelsall.

Tuberculosis Association of Western Australia: Dr. V. A. F. Stewart.

Blood Transfusion Service: Dr. J. T. Irvine.

Department of Social Services Standing Committee on Rehabilitation: Dr. W. N. Gilmour.

State Medical Planning Committee: Dr. A. L. Dawkins.

Civil Defence Organization: Dr. A. A. Merritt.

National Safety Council of Western Australia: Dr. J. S. Lekias.

A.N.Z.A.A.S. Congress: Dr. G. King, Dr. W. F. Simmons and Dr. D. Sinclair.

A.D.A. Fluoridation Education Committee: Dr. J. T. Irvine.

Health Education Council Television Committee: Dr. D. E. Copping.

National Heart Foundation: Dr. R. L. Leedman.

Committees.

The following are the members of standing subcommittees appointed by Branch Council:

Publicity: Dr. D. D. Keall (convenor), Dr. C. W. Anderson (resigned February 3, 1960), Dr. Leigh Cook, Dr. F. C. Macaulay (appointed February 3, 1960), Dr. A. A. Merritt.

Medico-Legal: The President (convenor), Dr. A. A. Barr, Dr. B. A. Hunt.

Medico-Pharmaceutical: Dr. Leigh Cook (convenor), Dr. A. A. Barr, Dr. B. C. Cohen, Dr. L. I. Henzell.

Ethics: The President (convenor), the Honorary Secretary, Dr. J. P. Ainslie, Dr. Leigh Cook, Dr. A. L. Dawkins, Dr. L. E. Le Souef, Dr. F. C. Macaulay, Dr. A. A. Merritt.

Fees Advisory: Dr. J. P. Ainslie (convenor), Dr. J. L. Day, Dr. R. L. Leedman, Dr. F. C. Macaulay, Dr. H. Macmillan.

Committee to Confer with Benefit Organizations: Dr. Leigh Cook (convenor), Dr. C. W. Anderson, Dr. D. M. Clement.

Social Relations: Dr. B. W. Buttsworth (convenor), Dr. P. W. Atkins, Dr. H. S. Cohen, Dr. A. L. Dawkins, Dr. F. C. Macaulay.

Post-Graduate: Dr. D. E. Copping, Dr. J. G. Hislop, Dr. F. C. Macaulay.

Medical Benevolent: Dr. J. L. Day (chairman), Dr. W. B. C. Gray, Dr. H. Macmillan.

Hospital Policy: Dr. Leigh Cook (chairman), Dr. C. W. Anderson, Dr. D. M. Clement, Dr. P. D. Goatcher, Dr. D. D. Keall, Dr. R. L. Leedman, Dr. F. C. Macaulay, Dr. C. Fortune, Dr. H. McComb, Dr. A. Daly Smith, Dr. E. Minchin, Dr. B. W. Nairn, Dr. W. N. Gilmour, Dr. J. L. Taylor, Dr. A. G. Murray.

Editorial: Dr. R. L. Leedman, Dr. A. A. Merritt, Dr. R. S. W. Thomas.

Amendments to By-Laws.

The following amendments to the by-laws of the Branch were made during the year:

By-law 15A: Amend to read (amendment in italics):

No member shall conduct his professional practice through or by means of a limited liability company if any of the shares of the company or any interest of any such shares are, or is held by or on behalf of or in trust for any person who is not a practising medical practitioner. *"Practising" shall mean full time practice within the company. In special circumstances Branch Council may give permission for a member to continue in part-time practice as a member of a limited liability company.*

By-law 15B: Insert now by-law 15B:

15B. No member shall share any direct financial return from the practice of medicine with a lay person.

Branch Constitution.

During the year a subcommittee of Council has been examining the present Branch constitution to see whether it meets present-day needs. A number of recommendations concerning the method of election of the Branch Council, the cooption to Council of a senior member of the Faculty of Medicine, University of Western Australia, and other matters of a similar nature have been adopted by Council and will be referred to the next meeting of Convocation for consideration.

Public Health.

We wish to take this opportunity of thanking Dr. Linley Henzell, the Commissioner of Public Health, Dr. W. S. Davidson, the Deputy Commissioner of Public Health, and Dr. J. B. Mathieson, the Commonwealth Director of Health, for their valuable cooperation and assistance during the year.

Federal Council.

Dr. C. W. Anderson and Dr. D. M. Clement were the representatives of the Branch on Federal Council and attended two meetings of the Federal Council during the year, full proceedings of which were recorded in THE MEDICAL JOURNAL OF AUSTRALIA. Branch Council wishes to record its deep appreciation of the work performed by these members on behalf of the Branch.

Pharmaceutical Benefits.

The Federal Council at its meeting on February 26, 1960, considered the recent alterations to the *National Health Act* relating to Pharmaceutical Benefits.

At its previous meeting in September, 1959, the Council had protested to the Minister for Health against the action of the Government in framing the amendments to the Act without any prior reference to the medical profession, whose advice and assistance might have been of great value to the Government and were readily available, as has been the case since the initiation of the National Health Service. Further, the details of the proposals had not been made available to the practising profession until a few days before their implementation, and a reasonable and justifiable request to the Minister to postpone the inception of the scheme to a date later than March 1, in order that doctors might familiarize themselves with the new conditions, had been refused. In spite of this the Federal Council, having regard to the public interest, decided to recommend to members that they conform to the procedures laid down in the altered Pharmaceutical Benefits arrangements.

There are still many anomalies and imperfections in these arrangements, and the Federal Council will continue its efforts to have them rectified. After having observed the working of the scheme for six months, the Council, at its next meeting, will review the whole position in the light of the interests of both the medical profession and the public.

Formation of Medical Association of Australia.

Branches in Australia are unanimously of the opinion that a Medical Association in Australia, separate from but affiliated with the British Medical Association, should be formed. A subcommittee has been appointed to prepare a draft skeleton constitution for the new Association, to be considered at the next Federal Council meeting to be held later this year. It is then proposed that a convention be held so that all sections of the medical profession in Australia may be consulted.

Australasian Medical Publishing Co. Ltd.

This company, which is wholly owned by the Australian Branches of the British Medical Association, has had an active and prosperous year. Extensions to the building and

plant, made at a cost of £100,000, were in full operation, with a corresponding increase in the printing orders that could be fulfilled.

The profession is now able to reap some of the benefit of this very fortunate business activity, since it has been decided that next year payment by the Branches for the provision of the Journal should be only 5s. per member, all of which would go towards the Building Fund, and debentures to this amount would be issued to the Branches.

The effect of this decision is that the Journal will be provided free to members, while the 5s. capitation rate will be a loan by the Branches for building extensions. Members will have noted that from July 1 the Journal has placed its table of contents on the front cover, and the change has been favourably received.

When the World Medical Association Council met in Sydney, a luncheon was tendered to its members by the directors, and this was followed by a tour of The Printing House and the unveiling by the Chairman of Directors, Sir Henry Newland, of a plaque commemorating the services of the Journal's late Editor, Dr. Mervyn Archdall.

B.M.A. Prize.

Council decided to make available annually to the University a prize consisting of a cheque for 50 guineas and an inscribed medallion to be known as the B.M.A. Prize. The prize is to be awarded to the student who obtains the highest marks in the final year of the medical course. This year the prize was awarded to Dr. C. G. Picton-Warlow and will be presented at the annual general meeting.

Hospital Policy Committee.

The Hospital Policy Committee of the Branch now consists of the chairman and honorary secretary of the clinical staff, Royal Park Hospital, the chairman and honorary secretary of the honorary staffs at the other metropolitan public hospitals and the Executive Committee of the Branch. Regular quarterly meetings are now held, and the committee has considered many matters during the year of common interest to the staffs of hospitals.

Definition of "Specialist".

In June, 1959, Convocation adopted a definition of "specialist". Council advised all members that it intended to prepare a list of members in specialist practice conforming with the definition by Convocation. Following full examination by Council, it was found that at the present time there are many difficulties associated with the compilation of such a list. The matter will receive further consideration at future meetings of Convocation.

Friendly Societies Health Services.

Physiotherapy Clinic.

Council having been assured by the Friendly Societies Health Services that only registered physiotherapists would be allowed to treat patients at the Westralian Therapy Service, Council advised members that no objection was seen to the referral of patients to the therapy service.

Social.

Medico-Legal Golf: The annual golf match between the Law Society and this Branch was held at Royal Perth Golf Club on October 9, 1959, and was voted most successful by those attending the golf and the dinner which followed. The medicos were again successful in the match between the professions. The foursomes trophy was won by Messrs. Forbes and Stables of the Law Society. Trophies presented by the British Medical Agency Company for the best individual score by a lawyer and a doctor were won by Mr. Stevenson and Dr. Barnard respectively.

Cocktail Party: The annual cocktail party was held on August 1 at the Dalkeith Civic Centre. It has been decided that the Dalkeith Civic Centre will be the venue for social functions of this nature arranged by the Branch.

British Medical Agency Co. of W.A. Ltd.

The Company had another successful year with continued expansion in activities. The net profit of the company has now reached worthwhile figures, and will become an increasing source of finance for Branch activities. Members are urged to support this company, which is wholly owned by the members of the Branch. The thanks of members are due to the directors who, in an honorary capacity, supervise the activities of B.M.A.C.

Medical and Associate Professions Superannuation Plan.

The superannuation plan, which first accepted members in February, 1959, is now fully operating. In June, 1959, members of the Australian Dental Association (W.A. Branch) were invited to join the scheme. The present membership is 80, comprising 67 medical practitioners and 13 dentists. The plan offers an excellent scheme to members in private practice to provide for their retirement.

Temporary Group Term Assurance.

Concurrently with the implementation of the superannuation plan, B.M.A.C. has arranged a master policy with an insurance company, under which members may insure themselves at rates which are a small fraction only of the rates applicable to conventional life and endowment insurance policies. This scheme is available to all members whether in private practice or not.

Staff.

Council wishes to express to the office staff its sincere thanks for their cooperation during the year.

MEDICAL BENEVOLENT COMMITTEE.

Dr. J. L. Day presented the report of the Medical Benevolent Committee, which was adopted. The report is as follows.

As members are aware, medical benevolence is now handled through a subcommittee of Council instead of through a separate association.

The income of the Committee during the year totalled £721 1s., derived from an amount of one guinea set aside from subscriptions received from members of the Branch, an amount of £27 received as interest on Commonwealth bonds and a donation of eight guineas received from a member. This latter amount is, I think, worthy of mention, as it was paid by a member to medical benevolence as an expression of appreciation for medical attention received from one of his colleagues. This practice of forwarding donations to medical benevolence instead of acknowledging services received from colleagues in some other fashion has been in vogue in Victoria for many years and is a considerable source of income for medical benevolence.

The expenditure during the year was by way of gift to four widows and three members in necessitous circumstances, amounting to £660 7s. 5d. In addition, loans totalling £1585 were made to two doctors. Of this amount £100 was repaid. The balance held in the Medical Benevolent Committee account is £1704 0s. 11d., which members will know is a considerable reduction in the balance held at December 31, 1958, of £3128 7s. 4d. As was mentioned in my report last year, the Committee was called upon to meet considerably greater expenditure than had been experienced in previous years, and on present indications the current level of financial assistance to necessitous members and dependants may have to continue. Your Committee is aware that the membership realizes its responsibilities towards medical benevolence and feels sure members will respond generously if it becomes necessary to call for additional funds.

When the activities of the Medical Benevolent Association were transferred to the Medical Benevolent Committee, Council asked me to continue on for one more year as chairman of the Committee. This will, therefore, be my last report as chairman, and I take this opportunity to thank all those members who have helped in the administration of medical benevolence with which I have been connected since the formation of the Medical Benevolent Association in 1930.

JOHN L. DAY,
Chairman.

The President moved that it be recorded in the minutes that the Branch was most appreciative of the work performed by Dr. Day, who had been concerned with medical benevolence since the formation of the Medical Benevolent Association some thirty years before. The motion was carried with acclamation.

It was resolved to recommend to Branch Council that consideration be given to setting aside the sum of two guineas from members' subscriptions for medical benevolence instead of one guinea as heretofore.

It was also resolved that Council be asked to examine the Victorian proposal in which members made donations to medical benevolence as an acknowledgement of medical treatment received from colleagues.

BRITISH MEDICAL ASSOCIATION (WESTERN AUSTRALIAN BRANCH).

Statement of Income and Expenditure during Twelve Months ended December 31, 1959.

INCOME.

	£ s. d.	£ s. d.
By Members' Subscriptions		9,592 5 0
„ Interest—		
(a) Commonwealth Bonds, etc.	25 15 1	
(b) Aust. Med. Pub. Co. Ltd.—		
(i) Debenture Series A-D	26 5 0	
(ii) Debenture Series E	167 10 2	219 10 3
		£9,811 15 3

EXPENDITURE.

	£ s. d.	£ s. d.
To Subscriptions to—		
(a) Members' Journals—		
(i) Aust. Med. Pub. Co. Ltd.	736 0 0	
Less Series E Debentures	368 0 0	368 0 0
(ii) B.M.A., London		1,173 15 0
		1,541 15 0
(b) Federal Council—Capitation		881 5 0
(c) Medical Benevolent Committee		685 13 0
(d) Flying Doctor Service		1 1 0
(e) Historical Society of W.A.		1 1 0
(f) W.A. Council of Social Service		10 10 0
(g) Medical Library of W.A.		250 0 0
		3,371 5 0
„ Cost of Administration		
Audit Fees	21 0 0	
B.M.A. Prize	52 10 0	
Car Expenses—Secretary	185 1 2	
Depreciation	42 1 9	
Duplicating	19 15 0	
General Expenses	10 17 6	
Income Tax	110 1 0	
Legal Expenses	10 10 0	
Loss on Realization Commonwealth Bonds	89 2 1	
Medico-Political Expenses	73 8 0	
Postages and Petty Cash	190 18 0	
Printing Expenses	21 5 10	
Salaries	1,917 13 2	
Stationery	11 9 2	
Superannuation—Miss P. Oliver	18 0 0	
Superannuation—Secretary	156 9 2	
Telephone	34 0 0	2,964 1 10
		6,335 6 10
„ Excess of Income over Expenditure		3,476 8 5
		£9,811 15 3

Statement of Assets and Liabilities at December 31, 1959.

ASSETS.

	£ s. d.	£ s. d.
Subscriptions in arrears		134 8 0
Investments—		
(a) Aust. Med. Pub. Co. Ltd.		
(i) Debentures A-D	420 0 0	
(ii) Debentures E	3,037 5 0	
(b) B.M.A.C. shares	9 0 0	3,466 5 0
Fixed Assets—		
B.M.A.C.—B.M.A. House Loan Account	34,997 12 8	
Furniture and Fittings as at January 1, 1959 £841 15 9		
Less Depreciation £42 1 9	799 14 0	35,797 6 8
		£39,397 19 8

LIABILITIES.

	£ s. d.	£ s. d.
Subscriptions in Advance		46 19 0
Bank of New South Wales—		
Overdraft		4,329 2 8
Sundry Funds in Credit		
B.M.A. House—Members' Loan Account	10,608 4 6	
Car Badge Account	74 4 2	
Entertainment Fund	111 3 8	
Library—Donations Account	27 11 2	
Library—Cyril Bryan Fund	179 18 1	
Library—Harry Lucraft Fund	22 1 0	
Medical Benevolent Committee	1,704 0 11	
Medico-Legal Golf	8 18 2	
Nelson Bequest	17 7 1	
Post-Graduate Committee Account	144 8 6	
Post-Graduate Grant Account	210 1 2	
Publicity Fund	75 5 4	13,183 3 9
Accumulated Reserve Account		
Balance at January 1, 1959	16,642 5 7	
Add Excess of income over expenditure	3,476 8 5	
Add Transferred from Building Fund	1,720 0 3	21,838 14 3
		£39,397 19 8

I report that I have audited the accounts of the British Medical Association (Western Australian Branch) for the year ended December 31, 1959. In my opinion the accompanying balance sheet is properly drawn up and exhibits a true and correct view of the state of the Association's affairs as at December 31, 1959, and the attached income and expenditure account is also properly drawn up and exhibits a true and correct view of the Association's affairs for the year. Both are in accord with the best of the information and explanations given to me, and as shown by the books of the Association.

Perth, Western Australia.
February 12, 1960.

(Signed) E. B. JACKMAN, A.A.S.A., A.C.I.S.,
Auditor.

POST-GRADUATE COMMITTEE OF WESTERN AUSTRALIA.

The report of the Post-Graduate Committee for the year 1959 was presented by Dr. F. C. Macaulay, in the absence of Dr. J. G. Hislop, and adopted. The report is as follows.

The Post-Graduate Committee this year concerned itself with the organization of visits of overseas lecturers, the arrangement of the monthly clinical meetings of the Branch, publicity for all post-graduate activities and the sponsorship of members undertaking post-graduate education overseas. During 1959 three lecturers visited Western Australia under the ægis of the Post-Graduate Federation—Professor R. Farquharson as the Category A lecturer, and Professor A. Johnstone and Professor R. Kark. Visiting lecturers during the year were Mr. W. C. Gissane, the Sims Travelling Professor for 1959, and Dr. A. Gilchrist, whose tour of Australia was sponsored by the Cardiac Society of Australia.

In order to provide an opportunity for our own members to inform the profession of interesting work in which they were engaged, two B.M.A. clinical meetings were set aside for this purpose. Three members presented papers at these meetings.

Only one country group accepted the offer by the Committee to arrange visiting lecturers. Professor Macdonald and Professor Saint visited Narrogin during July, and Dr. A. Cohen, Dr. C. Fortune and Dr. W. Gray visited that town during December.

The Category A lecturer for 1959, Professor Farquharson, took part in a post-graduate week-end arranged by the Western Australian Faculty of the Australian College of General Practitioners, which was held at Bunbury. This meeting was most successful, there being a large attendance from members in the south-west and from the metropolitan area.

The Post-Graduate Committee continued its policy of recording post-graduate lectures, but the demand from country practitioners for the recordings to be made available remains very small.

In the Post-Graduate Committee report last year it was indicated that with the advent of the Medical School a reappraisal of the constitution of the Post-Graduate Committee was desirable. Following consultation with the Faculty, the Post-Graduate Committee now comprises three members nominated by the Faculty, one member each nominated by the Royal Australasian College of Surgeons, The Royal Australasian College of Physicians, the Australian Regional Council of the Royal College of Obstetricians and Gynæcologists and the Australian College of General Practitioners, and three members nominated by the Branch. The Committee has been appointed for a period of three years and has been requested by Council to examine in detail the post-graduate needs of all medical practitioners in Western Australia. The Committee has already undertaken a preliminary survey, and expects to be able to present interim reports concerning the needs of particular sections from time to time, and to present an integrated report when its investigations are completed. The Committee will be seeking information on many aspects of post-graduate needs, and looks forward to the full cooperation of the profession in this project.

J. G. HISLOP,
Chairman.

REPORT OF THE HONORARY TREASURER.

The Honorary Treasurer, Dr. P. D. Goatcher, presented his report, which was adopted. The report is as follows.

The amount transferred to the Accumulated Reserve Account for the year under review was £5196 8s. 8d., which included an amount of £1720 0s. 3d. which was donated by members over the past five years towards the Branch Building Fund. The balance of £3476 8s. 5d. is the amount by which income of the Branch exceeded expenditure. The cost of administration of the Branch affairs altered very little, the only major items being increases in salaries granted to the office staff.

B.M.A. London found it necessary to increase the subscription rates payable by overseas members from £A1 11s. 6d. to £Stg.2 2s., which in round figures will cost the Branch in 1961 an additional £A800. This additional expenditure will be met without increase in the current rates of subscription.

Council recently reviewed the rates of subscription payable by members, but decided against recommending any alteration in the present rates in view of the proposal to form a separate medical association in Australia.

Since the property at 8 King's Park Road was purchased in 1954, the Branch has been involved in expenditure of approximately £35,000 in building B.M.A. House. Other than donations of £1720 mentioned above, the whole of the cost has been met from members' subscriptions and the activities of the British Medical Agency Company. The bank overdraft has now been completely cleared, and when interest-free loans totalling approximately £4640 have been repaid, the Branch will be completely free of debt. One must regard this as a most satisfactory position. I cannot leave this matter without, as previous Treasurers have done, mentioning the considerable assistance which was received throughout the whole of the building project from members who generously made available sums of interest-free money.

The activities of the British Medical Agency Company continue to be an increasing source of income to the Branch finances. In recent years there has been a steady increase in the income derived by the Branch from the Company, and, provided members continue in increasing numbers to use its services, the Branch can expect to receive great benefit.

P. D. GOATCHER,
Honorary Treasurer.

APPOINTMENT OF AUDITOR.

It was resolved that Mr. E. B. Jackman, A.A.S.A., A.C.I.S., be appointed auditor to the Branch for the ensuing year.

VOTES OF THANKS.

Dr. N. Cuthbert, on behalf of the members, moved a vote of thanks to the outgoing members of the Council. The motion was carried with acclamation.

Medical Matters in Parliament.

HOUSE OF REPRESENTATIVES.

THE following extracts from *Hansard* relate to the proceedings of the House of Representatives.

April 5, 1960.

Hospital and Medical Benefit Scheme.

MR. DEAN: I ask the Minister for Health whether the new pharmaceutical benefit arrangements have been responsible for a rise in hospital fees as announced recently in some States. Will the honorable gentleman say how hospital patients are affected by these new arangements.

DR. DONALD CAMERON: The new pharmaceutical benefit arrangements could not possibly be responsible for any rise in hospital fees. For the honorable gentleman to understand how hospital patients are affected, I should perhaps explain the way in which hospitals provide the drugs used by patients. Public hospitals buy drugs in bulk. The usual practice was to supply the drugs to the patient without charge. The Commonwealth reimbursed the State hospitals for the drugs that were covered by pharmaceutical benefits. With the new scheme and the great widening of the pharmaceutical benefits list, the Commonwealth has made a new arrangement with the States, under which hospitals will be reimbursed in accordance with a formula. The formula will in fact give to State hospitals rather more than the old arrangement did.

With patients in private and intermediate wards of public hospitals, the former practice was that the pharmaceutical benefits were supplied free by hospitals and patients were charged the full dispensing fee of all other drugs. Again, with the widening of the pharmaceutical benefits list, a new arrangement has been made in at least one State. The hospitals will now charge a flat rate of £1 1s. a week to patients in private and intermediate wards. Obviously, this must involve some degree of hit and miss, because some patients will receive only a couple of injections of morphia, which would cost a few pence, and others will receive drugs which would cost more than £1 1s. This is an arrangement made by the hospitals themselves and in no way imposed on them by the Commonwealth. In fact nothing in this legislation compels State hospitals to make higher charges to their patients, or indeed necessitates their doing so. However, nothing in the legislation prevents their following this course. If hospitals intend to increase their charges because they supply drugs to patients, they certainly do not do so because of any Commonwealth legislation or because of any treatment that they have received from the Commonwealth Government.

Trioptic Lenses.

MR. LUCOCK: My question is directed to the Minister for Health, who, no doubt, is aware of a report of the value of trioptic lenses for cases of near blindness. Can the Minister give me any information as to the value of these lenses?

DR. DONALD CAMERON: Mr. Speaker, this report was brought to my notice some time ago and I had some investigations made. The Ophthalmological Society of Australia has reported that it does not recommend these lenses and that, in fact, assistance in many cases of blindness is not to be sought merely in higher magnification which only gives a clearer view of an already distorted image. From such investigations as I have been able to make there appears to be not a great deal to hope for from these lenses.

Hospital Benefit Scheme.

MR. LUCHETTI: Has the attention of the Minister for Health been directed to complaints made by pensioners and officers of pensioners' organizations that pensioners are called upon to join benefit funds in order to obtain treatment in public wards? I ask the Minister to make it clear now that pensioners are not obliged to join funds in order to receive such treatment. Will the Minister give urgent and immediate consideration to the need to allow credits for money paid by pensioners for intermediate ward treatment, and where pensioners are not members of funds, to permit credits to be given to them for intermediate ward treatment?

DR. DONALD CAMERON: The position is that treatment in hospitals is subject to what might be called a gentleman's agreement between the Commonwealth and State Governments, under which the Commonwealth pays the State Government concerned 12s. a day for each bed occupied by a non-insured pensioner. If a State Government wishes to terminate that arrangement it has full power to do so. The hospitals are entirely under the control of State Governments, and there is nothing that this Government can do to prevent a State Government from acting in that way. I am not quite sure that I understand what the honorable gentleman means about the credits being given to pensioners; but if any credit is to be extended in relation to a bed that is occupied either by a pensioner or any one else, it can be extended only by a State Government and not by the Commonwealth Government.

Common Colds.

MR. SWARTZ: asked the Minister for Health, upon notice:

1. Has any progress been made recently towards the discovery of a cure for the common cold?

2. Have the principal investigations been made in the United Kingdom?

3. Has any work in this field been carried out in Australia?

DR. DONALD CAMERON: The answers to the honorable member's questions are as follows:

1 and 2. Yes. The Common Cold Research Unit of the Medical Research Council of Great Britain has recently succeeded in identifying and cultivating certain viruses derived from human patients suffering from common colds. It may be hoped that the discovery will lead to identification of the cause of the common cold. Meantime it will now be possible for the first time to conduct experiments on volunteers to test the pathogenicity of particular viruses demonstrably associated with and reasonably suspected of being causes of the common cold.

3. No similar work in this field has been carried out in Australia.

Pharmaceutical Benefits Advisory Committee.

MR. CAIRNS asked the Minister for Health, upon notice:

1. What are the names of the persons who constitute the Pharmaceutical Benefits Advisory Committee?

2. What are the conditions of appointment of these persons and when were they appointed?

3. Is he obliged to accept the committee's advice; if not, under what circumstances would its advice not be accepted?

DR. DONALD CAMERON: The answers to the honorable member's questions are as follows:

1 and 2. The Pharmaceutical Benefits Advisory Committee consists of an officer, with pharmaceutical qualifications, of the Commonwealth Department of Health, four medical practitioners appointed from six medical practitioners nominated by the Federal Council of the British Medical Association in Australia, a pharmaceutical chemist appointed from among three pharmaceutical chemists nominated by the Federal Pharmaceutical Service Guild of Australia, and a pharmacologist. The present committee was appointed on 13th April, 1954.

3. Section 101 (4) of the National Health Act provides that where a drug or medical preparation was not a pharmaceutical benefit immediately before the commencement of the new pharmaceutical benefits scheme on 1st March, 1960, that drug shall not be made a pharmaceutical benefit except in accordance with a recommendation by the Pharmaceutical Benefits Advisory Committee to the Minister. Subject to this provision, the Minister is not obliged by law to accept the committee's advice, but it is my policy to do so unless special conditions exist which render it necessary to decide otherwise.

Pensioner Medical Service.

MR. WARD asked the Minister for Health, upon notice:

1. Is it a fact that the wife of a person who is in receipt of a totally and permanently incapacitated ex-servicemen's pension is, upon reaching the qualifying age for an age pension, deemed to be ineligible for the benefits of the free health scheme available to the recipients of other classes of Commonwealth pensions?

2. If so what is the reason?

DR. DONALD CAMERON: The answer to the honorable member's questions is as follows:

1 and 2. The wife of a person who is in receipt of a totally and permanently incapacitated ex-serviceman's pension would not be a pensioner as defined in the National Health Act, nor would she be a dependant of such a pensioner, and therefore would not be eligible for the benefits of the Pensioner Medical Service.

April 6, 1960.

Pensioner Medical Service.

MR. THOMPSON: My question, which is addressed to the Minister for Health, is prompted by his reply to a question yesterday to the effect that arrangements had been made with the State Governments for a payment by the Commonwealth of 12s. per day in respect of a pensioner in a public hospital. Does that arrangement apply to all pensioners, without charge to them, or does it apply only to pensioners who have pensioners' medical cards?

DR. DONALD CAMERON: The arrangement is not a legal arrangement, but a sort of gentleman's agreement between the Commonwealth and States. It relates to pensioners who are in receipt of social service pensions and are not insured. The Commonwealth will pay 12s. per day to States in respect of them when they need to go into hospital, and the State Governments will admit them free to public hospitals. Some of them will not have medical cards, but the great majority will have them.

Out of the Past.

SYDNEY MEDICAL MISSION.[1]

[From the *Australasian Medical Gazette*, December, 1901.]

A MEETING was held in the vestibule of the Town Hall on Wednesday, November 27th, to receive the First Annual Report of the Sydney Medical Mission. The mayor of Sydney (Sir James Graham M.D.) presided: there was a large attendance. The mission was started at 192½ Elizabeth Street in November 1900, through the liberality of Mrs. Hugh Dixson who gave £200 for the purpose: Miss Julia Carlisle Thomas M.B., Ch.M. is the medical superintendent. The medical report of the work done for the year is as follows: Patients treated 2,047; visits paid to the homes of 413 patients 1957: attendances at dispensary of 1634 patients 6892: operations needing a general anæsthetic 7. A nominal charge of 3d. is made for medicine but only about half of the patients can afford to pay it. The chairman, in his introductory remarks, spoke highly of medical missions in Edinburgh and other parts of the world, and bore testimony to the good work being done in Sydney by Miss Thomas. Dr. Grattan Guinness made an eloquent appeal to those present for funds, with the result that a sum of £181.10.0 was promised in the room.

[1] From the original in the Mitchell Library, Sydney.

Correspondence.

GENERAL PHARMACEUTICAL BENEFITS.

SIR: Here are four vital points for success, that every general practitioner in the land should learn by heart unless he has something better to offer:

1. Attend your next sub-branch meeting even though, in 9 out of 10 cases, you will never have been at one before.

2. Ring or write to every doctor-friend and consultant to tell them that, even though specialized, their future and that of their children (if like mine one is a medical student) is threatened, and that they should attend their next sub-branch meeting though not yet members; no other line of attack could be so fruitful.

3. Have a definite platform yourself—e.g.: (i) No prescribing under regulation—including Pensioner Medical Service. (ii) Let the chemist-Government-patient combination administer free drugs, and let us spend our time in healing.

4. Spend the extra five minutes with some of your patients giving them our side of the question—if for no other reason than to counter the cowardly and lying attacks in Sydney's papers in the past fortnight.

Yours, etc.,

240 Penshurst Street, Willoughby.
May 10, 1960.

C. R. WATSON, M.B., B.S.

SIR: When the new Pharmaceutical Benefits booklet was issued, I rang the local Federal Member. He said that his party, Labour, was keen to hear physicians' views on this. He failed to keep an appointment with me, and has given no apology nor explanation.

I agree with Dr. Everingham, Dr. Hammond and Dr. Rees, that a fight should be made, and I am willing to cooperate in any way in what is only part of a bigger fight to prevent this country being ruled by regulations made by public servants.

Yours, etc.,

535 High Street, Preston, Victoria.
May 11, 1960.

THOMAS J. WALSH.

SIR: I wish to add my name to the list of those expressing dissatisfaction with "the scheme" foisted on us.

It seems to me that the restrictive governmental regulations to which we have been compulsorily subjected take away our basic liberties, to the detriment of our patients, and bring us closer to nationalization.

That we should be made pawns in a political game fills me with abhorrence. I would like nothing better than to be able to prescribe drugs for my patients without having to consider the expense; but surely this is ultimately possible without all these puny restrictions.

Dr. C. Bridges-Webb, Dr. D. Collins and Dr. E. L. Fleming (MED. J. AUST., May 7, 1960) have outlined a scheme for combating the situation. Let us adopt such a scheme. Let us make a concerted effort to win our freedom. Let us acquaint the public with the truth of the situation.

Yours, etc.,

Merino, Victoria.
May 10, 1960.

CHARLES F. BALDACCHINO.

"TOFRANIL."

SIR: At the risk of extending the discussion unduly, perhaps I may be permitted some further comments following the spirited but unacceptable advocacy of uncontrolled drug studies by Dr. MacLean and Dr. Noack ("Tofranil", MED. J. AUST., April 30, 1960, page 705), since I feel that the problems raised have considerably wider reference than just the "Tofranil" trial under consideration.

I find it difficult to compare my own clinical observations with those of Dr. MacLean and Dr. Noack. In my experience, patients who present at an out-patient clinic in "whose illness depression was a marked feature" form a very heterogeneous group, and not a few will improve in the space of time whatever therapeutic agent or technique is employed. I too suspect that "Tofranil" may have a specific effect on mood—but how much effect? What type of effect? In what type of patient? Etc., etc.

Can we continue to accept clinical impression?—or does medical research require a methodology aimed at some degree of scientific objectivity and at testing more specific hypotheses? So many authors have discussed this problem that I would but refer to such views and reviews as those advanced in Professor Meehl's book "Clinical versus Statistical Prediction".[1]

The clinician who says, as it were, "I can recognize an elephant when I see one, even if I cannot describe it or devise tests to measure it", is often on tenuous ground. So far as the insulin coma treatment of schizophrenia is concerned, the elephant which we recognized so clearly seems to have turned out to have been somewhat of a mirage. Most psychiatric units in England, America, Australia, etc., have abandoned insulin coma after it had reigned supreme for over twenty years. Whilst the advent of tranquillizers may have hastened this, it is now widely accepted that insulin has no specific therapeutic effect in schizophrenia. The writer participated in a study (Ackner, Harris and Oldham, 1957[2]) in which a carefully matched control group was subjected to exactly the same régime as an insulin coma group, except that coma was induced by barbiturate and terminated by dextro-amphetamine. No significant difference was found between the groups in remission rate, and the conclusion reached was that whatever the effect of a coma régime may be, "Insulin is not the specific therapeutic agent". It is, perhaps, a pity that this type of study was not more prevalent earlier in the day, and to my mind, Dr. Bartholomew's comments[3] on drug trials are all valid.

Methods which may apply to establishing "the effectiveness of penicillin, other antibiotics and sulphonamides against susceptible organisms" are quite irrelevant to the problems of evaluating a thymoleptic drug, and this is a false analogy. The "double blind" model aims at controlling such variables as spontaneous remission, placebo effect, unconscious observer error, etc., which are of minor importance on the culture plate and in antibiotic trials. Such a model is best used with a nomothetic approach to group selection, measures of improvement, etc., and with the statistical evaluation of results in large groups. If the descriptive approach to individual cases is used, little is gained from large group studies, and the statistical treatment of results may be misleading, because important variables are uncontrolled.

Dr. Noack questions "the ethics of using a placebo instead of a preparation believed to be potent". This argument has emotional, rather than intellectual, appeal when one considers the mortality and morbidity which have sometimes resulted from unproven therapeutic agents in the past. How many patients remain irreversibly demented following irreversible coma after insulin? He refers to a patient who committed suicide whilst on a placebo during a drug trial—but omits to mention that Stoller[4] reported that three patients (in a group of 80 cases) attempted suicide, one successfully, whilst on "Tofranil". This does not seem to be an "either-or" issue.

Yours, etc.,

Perth, Western Australia.
May 7, 1960.

I. PIERCE JAMES.

SURGERY AND THE GENERAL PRACTITIONER AND PROFESSIONAL UNITY.

SIR: In a recent article in the lay Press, a "high minded" surgical specialist wrote about the activities of general practitioner surgeons, using such unprofessional words as "assault of patients", etc., etc. He also implied that general practitioners would operate for financial considerations, but that such base motives were entirely foreign to the specialist.

One feels that in this uncharitable attack on his professional brothers, this so-called "colleague" reveals a weakness that is perhaps inherent in himself, and I feel that, at the least, his comments, far from doing good, are a potent cause of further deterioration in public-doctor

[1] "Clinical vs. Statistical Prediction", 1954, Minnesota University Press, Minneapolis.
[2] *Lancet*, 1957, 1:607 (March 23).
[3] MED. J. AUST., 1960, 1:556 (April 2).
[4] MED. J. AUST., 1960, 1:413 (March 12).

relationships, which seem to have deteriorated too far already without self-seekers promoting discord further.

Yours, etc.,

Engadine Medical Clinic,
1107 Prince's Highway,
Engadine, N.S.W.
May 6, 1960.

BOYD LEIGH.

LONDON MISSIONARY SOCIETY: VACANCY FOR A MEDICAL OFFICER.

SIR: I shall be grateful if you will permit me the use of your correspondence column to make known an urgent vacancy for a medical officer on the staff of the London Missionary Society in Papua.

This society was founded in 1795, since when it has operated in many parts of the world. The Papua Mission was commenced in 1871. Among our medical responsibilities in the Territory is the staffing of Gemo Island Hospital at Port Moresby. This institution, established by the L.M.S. in 1937, cares for upwards of 200 tubercular patients and a group of Hansenides. Financial responsibility for Gemo is borne by the Administration's Public Health Department. Until the present time Gemo Hospital has been staffed by nurses, (European and Samoan) and Papuan medical orderlies. Public Health Department doctors have paid regular visits. The rapid increase in numbers of patients, and the expected transfer to a new site on the mainland, now make imperative the appointment of a resident medical officer. The duties provide excellent opportunities for the study and treatment of tuberculosis and Hansen's disease. Interested persons should note that, as this is a medical missionary appointment, the terms and conditions will be those normally applicable to such service.

I shall be glad to give further information on receipt of inquiries submitting qualifications and experience.

Yours, etc.,

NORMAN F. COCKS,
Secretary in Australia and New Zealand.
London Missionary Society,
Chalmers House,
41 The Boulevarde,
Petersham, N.S.W.
May 12, 1960.

PHENACETIN AND NEPHRITIS.

SIR: Your "Current Comment" of April 9 indicates that the British Pharmacopœia allows a maximum of 0·35% of *p*-chloracetanilide (PCAA) in phenacetin. This is not so. The limit test, as described in the B.P. 1958, allows a maximum of only 0·17% PCAA.

The British Pharmacopœia is therefore much more stringent than your article leads us to believe, and the eight patients who were administered phenacetin containing 0·30% of impurity were certainly not being given B.P. material.

Yours, etc.,

1A Chester Street,
Glenelg,
South Australia.
May 11, 1960.

T. R. OSBORN, B.Sc.

[The reference in the "Current Comment" should have been to the Danish Pharmacopœia, not the British Pharmacopœia. We regret this error.]

THE NEEDLE IN POLIOMYELITIS VACCINATION.

SIR: Dr. S. J. Baker's misgivings about our "vaccinating sessions", expressed in your correspondence columns of today's issue, raise aseptic and administrative problems of considerable magnitude. His criticism is levelled at two things: the use of multiple doses in each syringe, and "waving the needle through the flame of a spirit lamp in a vague fashion" between injections. Whether this is the standard practice in Victoria or not I do not know, so will confine my remarks to New South Wales, where the usual procedure is to use multiple dose syringes, and a separate sterile needle for each subject.

This may sound safer than waving the same old needle through a flame; but is it? Hughes[1] and Evans and Spooner[2] have shown that, whenever a needle containing fluid is detached from its syringe, the suction created by withdrawing the nozzle of the syringe from the socket of the needle may aspirate infected fluid (containing hepatitis virus, for example) from the needle point through to the syringe nozzle. This occurs without any piston movement. If, in addition, the piston is withdrawn ever so slightly, this fluid may enter the syringe itself.

The reality of this danger may be confirmed by a simple experiment. A syringe containing normal saline is emptied through a 22 gauge needle, one and a half inches in length. The needle point is made to touch a drop of blood and the needle is then detached, care being taken that the piston does not move. The tiny drop of saline that adheres to the tip of the nozzle of the syringe is transferred to a glass slide and examined microscopically. It contains numerous red corpuscles that have been sucked right through the needle. I have not yet succeeded in detaching a needle of these dimensions from a syringe without this phenomenon occurring. It can be prevented only by increasing the length of the needle, or its diameter, or both, to such a degree as to render it unsuitable for "vaccinating sessions". (The risk is slightly greater with Luer than with "Record" fittings, but that is a minor detail.)

It follows, therefore, that our procedure in New South Wales carries the virtually inescapable risk of transferring a dose of virus from the subject with unrecognized hepatitis to the next person in the queue, and possibly to all who share the residue in that syringe, especially if slight piston movement has occurred. Evans and Spooner have endeavoured to make amends for their disturbing disclosure by adding that "accidental infections due to this practice do not seem to have been described, and experience generally suggests that the technique is, so far as any injection technique can be, a safe one". However true this may be, it is a passive attitude that accepts a known risk without seeking to eliminate it.

Fleming and Ogilvie,[3] on the other hand, have stressed the potential danger of this method, and have recommended that the needle be not removed between injections, but immersed in boiling water for 10 seconds, or better still, in Liquid Paraffin at a temperature of at least 130° C. (Apparently waving the needle through a flame is not wholly without merit, if one is not too vague about it.)

Fleming and Ogilvie have also insisted, and in this the War Office supports them,[4] that only one dose should be taken into a syringe at a time. After the injection of this dose, and until the needle has been heat-sterilized *in situ*, the piston is kept pressed firmly against the base of the barrel to avoid any possibility of aspiration by piston movement. Obviously this precaution is out of the question with a multi-dose syringe.

The argument is clear. In mass inoculation, all risk of cross-infection by the needle should be avoided, and this can only be done using single-dose syringes. The ideal is obviously to have a separate sterile syringe and needle for each subject, and to resort to the sterilization method of Fleming and Ogilvie only on the odd occasion when there are not enough syringes to go round. The administrative difficulties involved in applying this counsel of perfection to mass inoculation can well be imagined. Is it too much to ask the State Health Departments to put themselves above criticism in this matter, to eliminate the risk, and to achieve the ideal?

Yours, etc.,

2 Pembroke Street,
Epping, N.S.W.
May 7, 1960.

P. W. GILL.

"FINAL NOTICE."

SIR: Would you allow me to draw attention to the "Final Notice" issued by the N.S.W. Medical Defence Union to its members? I have intentionally put the phrase in inverted commas, as it differs so much from such notices as are sent by other financial institutions in similar circumstances. Other institutions send a final notice that informs the person concerned that his remittance is overdue and that the firm will keep him covered against fire, legal

[1] *Brit. med. J.*, 1946, 2: 685.
[2] *Brit. med. J.*, 1950, 2: 185.
[3] *Brit. med. J.*, 1951, 1: 543.
[4] *Brit. med. J.*, 1958, 1: 354.

action, etc., for seven days so that an oversight may be rectified without possible loss to the subscriber. Howbeit, when a remittance to the Union is overdue, the member is informed that his membership has expired and that any legal coverage is null and void till the day when the overlooked remittance is received by the secretary. Could I reasonably call such action unusual and crude?

One further point I would like to stress. When the delayed remittance is received by the Union, the member finds that he is charged for the six weeks during which time the Union has denied all legal responsibility. Could one call such procedure illogical?

Yours, etc.,

"Otaki",
Marrickville.
May 6, 1960.

LESLIE J. SHORTLAND.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Correspondence Course in Electrocardiography.

THE Post-Graduate Committee in Medicine in the University of Sydney has completed arrangements with the School of Medicine, University of Southern California, whereby the Committee will distribute in Australia, New Zealand and the Pacific Islands the University of Southern California's basic home course in electrocardiography. The course will consist of 50 lessons. Each lesson will be exemplified by electrocardiographic tracings, together with "unknown" electrocardiograms, the interpretation of which will be dealt with in subsequent lessons mailed to subscribers regularly at the rate of one a week. Correspondence and comments arising out of the course will be dealt with by the Committee's electrocardiographic course supervisor and a panel of experts. Distribution of the course is planned to begin in June, 1960. The fee for the course will be 40 guineas (£42).

Subscriptions and inquiries should be addressed to the Honorary Director, The Post-Graduate Committee in Medicine, 131 Macquarie Street, Sydney.

Examination Results.

The Post-Graduate Committee in Medicine in the University of Sydney announces that the undermentioned candidates satisfied the examiners at the recent examinations for Part I of the various medical diplomas of the University of Sydney as shown:

Dermatological medicine: B. H. Bartlett, I. H. E. Dawson, W. J. Flood, J. R. B. Guyot.

Gynæcology and obstetrics: R. S. Hyslop.

Ophthalmology: J. P. Sarks, P. A. J. Starr.

Psychological medicine: T. C. M. Lonie, Mary Manery, G. J. Ogg, N. Radziowsky.

Diagnostic radiology: L. K. Rasmussen, F. L. R. Sharp.

Diploma in Clinical Pathology.

The following candidates were successful in passing the recent examinations for the diploma in clinical pathology:

Group I: Penelope J. Barratt, L. A. Feain, K. O. A. Jones.

Group II: B. H. Coombes, W. E. L. Davies, V. A. Lovric.

Group III: L. A. Feain.

The following candidates have now successfully completed Groups I, II and III and are eligible for the award of the Diploma in Clinical Pathology: L. A. Feain, K. O. A. Jones.

Notes and News.

Victorian Industrial Safety Convention.

The 1960 Industrial Safety Convention will be held on August 9, 10 and 11 at the University of Melbourne. The Convention, sponsored by the Government of Victoria, is actively supported by employer and employee organizations and various advisory bodies associated with industrial

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED APRIL 23, 1960.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	2(2)	2	2(1)	..	..	1(1)	..	..	7
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	1	..	..	..	..	..	4	..	5
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	1(1)	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	..	12(10)	2(2)	..	..	..	1	..	15
Diphtheria	1	..	..	..	..	..	..	..	1
Dysentery (Bacillary)	..	6(6)	..	..	4(4)	..	2	..	12
Encephalitis	..	..	..	..	..	..	..	..	..
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	22(11)	31(16)	11(2)	10(6)	1	1(1)	..	..	76
Lead Poisoning	..	..	3(1)	..	..	..	..	..	3
Leprosy	..	..	..	..	1	..	..	..	1
Leptospirosis	..	..	2	..	..	..	..	..	2
Malaria	..	..	1	..	..	..	..	..	1
Meningococcal Infection	..	..	..	1	..	..	1	..	2
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	..	..	..	..	..	2	..	2
Puerperal Fever	..	..	1	..	..	..	..	..	1
Rubella	..	6(3)	..	1	1	..	..	..	8
Salmonella Infection	..	..	..	1(1)	1(1)	..	..	..	2
Scarlet Fever	7(4)	25(16)	..	4	1(1)	1	..	..	38
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	4(2)	..	1	..	5
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	28(19)	18(15)	17(6)	7(6)	5(3)	3(2)	1	..	79
Typhoid Fever	..	..	1(1)	..	..	..	..	..	1
Typhus (Flea-, Mite- and Tick-borne)	..	..	1	..	..	..	..	..	1
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1]Figures in parentheses are those for the metropolitan area.

safety. It aims to create, extend and maintain interest in industrial safety and to help develop and improve safety activities.

Commencing on the afternoon of August 9, the opening session will include addresses by noteworthy speakers. Lecture discussion groups, including subjects of specialized technical interest, will be held on Wednesday, August 10, and the final day is to be devoted to subjects of general interest and a review of the proceedings. An evening session will highlight the exhibition of safety equipment and the services available from the advisory organizations.

The Convention promises to be one of the most interesting and instructive yet held in Victoria. Further information can be obtained from E. N. Garlick, Secretary to the Organizing Committee, 1960 Industrial Safety Convention, 61 Spring Street, Melbourne, C.1 (Telephone: 63-0321—extension 6240).

Tenth Pacific Science Congress, Honolulu.

The tenth Pacific Science Congress will be held at the University of Hawaii, Honolulu, from August 21 to September 6, 1961, under the auspices of the National Academy of Sciences, Washington, and the Bernice P. Bishop Museum, with the cooperation of the University of Hawaii. As in previous years, there will be a Division of Public Health and Medical Sciences. Contributions to symposia are by invitation; other contributions, which must relate directly to problems in the Pacific region, may or may not be by invitation. Those interested are asked to contribute their papers, which will be allotted to sessions decided by the organizers. In addition to contributed papers, a review is being made of progress in medical work and developments in the Pacific area over the last half century. The proper approach is through organizers of divisions. The organizer for the Division of Public Health and Medical Sciences is Dr. Quentin M. Geiman, Stanford University School of Medicine, Palo Alto, California. The organizer for the Division of Nutrition is Dr. L. A. Maynard, Cornell University, Ithaca, New York.

World Medical Association.

APPOINTMENTS TO WORLD MEDICAL JOURNAL.

THE Headquarters Secretariat of The World Medical Association announces the appointment of Dr. J.-R. Gosset, editor of *Concours Médical*, of Paris, France, to the position of associate editor of *World Medical Journal*, official publication of the Association. Dr. Stanley S. B. Gilder, formerly editor of *The Canadian Medical Association Journal*, is the executive editor of *World Medical Journal*. The members of the editorial board include the executive and associate editor, the business manager and three members of council—namely, Dr. A. Fernández Conde (Cuba), Dr. Hugh Clegg (United Kingdom) and Dr. M. Poumailloux (France).

Nominations and Elections.

THE following have applied for election as members of the South Australian Branch of the British Medical Association:

Hoffmann, Mervyn John, M.B., B.S., 1959 (Univ. Adelaide), 289 Hindley Street, Adelaide.
Chan, Mary Mei Li, M.B., B.S., 1959 (Univ. Adelaide), Royal Adelaide Hospital, North Terrace, Adelaide.

The following have been elected as members of the South Australian Branch of the British Medical Association: Hutchins, John Noel, M.B., B.S., 1959 (Univ. Adelaide); Schwarz, Philip John, M.B., B.S., 1957 (Univ. Adelaide).

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association: Coupland, William Warwick, M.B., B.S., 1959 (Univ. Sydney); Carew, Bernard John, M.B., B.S., 1956 (Univ. Sydney); Dight, Ronald, M.B., B.S., 1959 (Univ. Sydney); Faithfull, Donald Kingsley, M.B., B.S., 1959 (Univ. Sydney); Bokor, Peter Paul, M.D., 1954 (Univ. Budapest) (licensed under the provisions of Section 21C of the *Medical Practitioners Act*, 1938-1958); Gerlach, Helmut Rudolph, M.D., 1923 (Univ. Breslau) (licensed under Section 21A of the *Medical Practitioners Act*, 1938-1958).

Deaths.

THE following deaths have been announced:

BOX.—Noel Edward Hamilton Box, on May 13, 1960, at Hawthorn, Melbourne.

SHAPPERE.—Arthur Joseph Shappere, on May 15, 1960, at Drummoyne.

Diary for the Month.

JUNE 1.—Victorian Branch, B.M.A.: Branch Meeting.
JUNE 1.—Western Australian Branch, B.M.A.: Branch Council.
JUNE 2.—South Australian Branch, B.M.A.: Council Meeting.
JUNE 3.—Queensland Branch, B.M.A.: Clinical Meeting in conjunction with the Brisbane General Hospital Clinical Society.
JUNE 7.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

Authors of papers are asked to state for inclusion in the title their principal qualifications as well as their relevant appointment and/or the unit, hospital or department from which the paper comes.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this Journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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